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G. PHILLIPS BEVAN, F.G.S.

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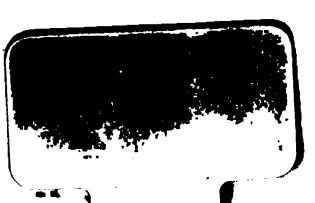

INDUSTRIAL GEOGRAPHY

PRIMER

OF THE

INDUSTRIAL GEOGRAPHY

OF

THE UNITED STATES

BY

G. PHILLIPS BEVAN, F.G.S., F.S.S.

ETC.

LONDON

W. SWAN SONNENSCHEIN & ALLEN

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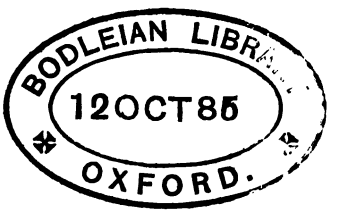

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PREFACE

A STRONG feeling has been growing up of late as to the advisability of embodying into our educational system some acquaintance with the industrial condition of the countries of the world, a knowledge of which is clearly of very great importance in these days of technical activity. The object of this series of Text-Books or Primers is to explain, in the simplest language, the resources and industries of each country, together with the physical and geographical causes that have led to their existence.

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INDUSTRIAL GEOGRAPHY.

THE UNITED STATES.

CHAPTER I.—MOUNTAIN RANGES, WATERWAYS, AND CLIMATE.

THE territory of the United States occupies a vast portion of the continent of North America, extending from the Atlantic Ocean on the east to the Pacific Ocean on the west, and from the chain of great lakes, to the north of which lies Canada, to the Gulf of Mexico on the south. The area of this vast country is more than $3\frac{1}{2}$ million square miles; its greatest length being 2,650 miles, and its greatest breadth 1,600. The extent of the Atlantic coast line is 7,000 miles, it being indented by several inlets of the sea, such as the Chesapeake, Delaware, and Massachusetts bays, and Albemarle and Pamlico sounds, while the projections of the land seaward consist of Cape Cod, and a large proportion of the State of Florida, which acts as a huge bulwark between the Atlantic and the Gulf of Mexico. The coast line on this side is 3,400 miles, and on the Pacific side 3,700, as the latter coast is much more regular in its outline, presenting but very few inlets or projections.

The Bay of San Francisco is the largest of these, though even this is of no great size.

Like most of the natural dispositions of the United States, the mountain ranges are on a very grand scale, though they all belong to two or three well-defined systems. In the Eastern States the great system is that of the *Alleghany* or Appalachian range, which, under one name or another, runs north-east to south-west through three-fourths of the whole country; in some parts consisting of one chain, in others of several parallel chains, with beautiful valleys between. In the extreme north-eastern State, that of Maine, the range is known as the Maine Highlands, of which the highest point is Mount Katahdin, 3,585 feet. In New Hampshire they form the White Mountains, noted for their grand scenery, Mount Washington rising to 6,234 feet, and Mount Adams to 5,960, while in the adjoining State of Vermont they are called the Green Mountains. To the south, in the State of New York, they are known as the Adirondacks (highest point, Mount Marcy, 5,402 feet), and the Catskill Mountains. South of Pennsylvania, where are the Blue Mountains, the Tuscarora Hills and other smaller ranges, commence the Alleghanies proper, which extend for some 1,300 miles, with an average breadth of 70 miles. In Virginia State the principal heights are those of the Blue Ridge, the most lofty peak of the whole range being Mount Clingman, 6,941 feet, in North Carolina, though Mount Mitchell is not far short of it at 6,732 feet. The Alleghanies finally die out in Alabama.

The next large system, that of the *Rocky Mountains*,

is on a far more extensive scale, running the whole length of the United States, and forming the chief watershed between the Atlantic and the Pacific. The term Rocky Mountains more properly belongs to that portion between British North America and lat. 38°, being from thence to Mexico known as the Sierra Madre, or Mother range. An important range called the Black Hills, branches off at about 40° lat., extending nearly to the Missouri river. The heights of the Rocky Mountains are very lofty, the chief being Fremont's Peak, 13,750 feet, in Wyoming; Long's Peak, 14,270; and Pike's Peak, 14,147 feet The *Pacific*, the third and last great system, lies westward of these ranges, and is grouped into the Coast Mountains, extending alongside the Pacific from the south of California to Vancouver's Island; the Sierra Nevada, lying between 35° and 42° lat.; and the Cascade Ranges to the north, which contain the highest peaks in the whole States, reaching, in Mount Elias (Alaska) to 17,900 feet; Mount Fairweather (Alaska), 14,700 feet; Mount Hood (Oregon), 14,000 feet; Mount Shasta (California), 14,000 feet; Mount St. Helen's (Washington), 13,300 feet. The great importance of these mountain ranges to the States is very evident, partly from the enormous volume of the rivers to which they give birth, but mainly from the extraordinary richness and variety of the mineral treasures that they contain, surpassing those of any other country.

The river systems are on the same colossal scale as those of the mountains, and are of very great value to the States, both from the extensive areas fertilised

by them, and the convenience of transportation. Before specifying, however, the river basins, previous mention ought to be made of the lake series, those vast reservoirs of inland waters, which in extent surpass any similar system in the world. The great chain of lakes, known as Superior, Michigan, Huron, Erie, and Ontario, constitutes the boundary between British North America and the United States, the dividing line running lengthways through the middle of all of them excepting Michigan, which belongs entirely to the latter. The following are the areas and volumes of these inland seas :—

	Area.		Length.		Depth.
Lake Superior,	31,500	square miles,	480	miles,	1000 feet.
,, Huron,	23,100	,,	252	,,	1000 ,,
,, Michigan	23,150	,,	320	,,	1000 ,,
,, Erie	7,800	,,	250	,,	120 ,,
,, Ontario	6,900	,,	190	,,	500 ,,

By means of this chain of lakes, which find their outlet by the St. Lawrence River, a water channel, capable of accommodating large vessels, is provided from the very heart of the grain and provision supplying States, so that a ship loaded at Chicago, on Lake Michigan, can proceed without change or hindrance direct to the docks at Liverpool, the Niagara Falls being avoided by the Welland Canal.

The river basins are as follows :—

1. The *St. Lawrence*, which conveys the waters of the lakes to the Atlantic, drains portions of the States of Vermont, New York, Pennsylvania, Ohio, Indiana, Illinois, Wisconsin, Minnesota, and the whole of Michigan, and is marked by a paucity of tributaries all along its southern or American course.

2. The *Atlantic* basin comprises the system of rivers which, for the most part, rise in the Alleghany Mountains, and flow eastward into the Atlantic, after a not very long career. These rivers consequently do not rank amongst the largest in America, and from the character of the country have the earliest portions of their course through hilly ground, giving rise to flourishing manufacturing towns, while the latter portion lies in the more level coast districts, affording more or less facilities for navigation. The chief of these rivers is the Hudson, which rises 4,000 feet above the sea amongst the Adirondack Mountains, in New York State, and has a course of 300 miles, being navigable for 150 miles, as far up as Troy. The Delaware rises in the Catskill Mountains, and, after receiving the Lehigh and Schuylkill rivers, falls into Delaware Bay below Philadelphia. The Susquehanna and the Potomac both fall into Chesapeake Bay, the one below Baltimore, the other below Washington, to both which places they are navigable. The James River rises in the Alleghanies, and has the same outlet as the two preceding ones, some distance below Richmond.

3. The *Mississippi* basin is a gigantic river system, occupying more than one-third of the entire area of the United States, and covering over 1,300,000 square miles. The Mississippi itself rises in Itasca Lake in Minnesota, very near the source of the Red River, and falls into the Gulf of Mexico below New Orleans, after a course of 2,900 miles, of which enormous distance 2,200 miles are navigable as far as the Falls of St. Anthony. Notwithstanding the volume of this mighty waterway, that of its so-called tributary, the

Missouri, is greater. This latter river rises in the Rocky Mountains, in the State of Montana, near the source of the Columbia, and after a course to the south-east of 3,096 miles, of which 2,500 miles are navigable, joins the Mississippi at St. Louis. Another great tributary of this system is the Ohio, formed by the union at Pittsburg, in Pennsylvania, of the Alleghany and Monongahela rivers. It joins the Mississippi at Cairo, after having for some time served as the boundary line between Kentucky and Illinois. Its length is 1,000 miles, entirely navigable by means of an artificial cut of two and a half miles at Louisville. Amongst the other chief tributaries of the system are the Yellowstone, the White River, and the Platte River, all joining the Missouri; the Arkansas and the Red River flowing into the Mississippi, and possessing amongst them an aggregate navigable stream of 5,000 miles. The whole of the system, therefore, is navigable for nearly 13,000 miles—a water accommodation such as no other country in the world can show.

4. The *Texas* basin comprises those considerable rivers which fall into the Gulf of Mexico, west, and independently of the Mississippi, draining the States of Texas and New Mexico, with parts of Colorado and Louisiana. The rivers are not numerous, but of considerable size, and from the nature of the country they are not of commercial importance. The principal ones are the Rio Grande, rising in the Sierra de la Plata, in Colorado, and having a course of 1,800 miles; and the Texan Colorado, of about half that length.

5. The *Pacific* basin comprises all those rivers that

flow from the various ranges of the Rocky Mountains into the Pacific Ocean, most of them having a westward course, though one very large stream, the Colorado, runs south to enter the Gulf of California. Its length is over 1,100 miles, and that of the Columbia, in the northern district of the Pacific slope, about 1,200. The other great river of this group is the Sacramento, with its tributary the San Joaquim, draining the richest mineral treasure ground in the world. The Columbia is partly navigable for some distance, but in general the characteristics of the rivers of the Pacific slope are those of marvellous scenery and vast developments of nature, rather than capabilities for commercial purposes. Amongst the peculiarities of the rivers of this region we must not omit to mention the *Great Inland* basin, in which the Salt Lake and its singular system of tributaries (self-dependent, and communicating with no seas) drain the States of Nevada and parts of Oregon, California, Utah, and Idaho. The Humboldt River in this basin is 350 miles long, but nowhere broader than a millstream.

The chief available waterways of the United States for steamers and large-sized vessels may thus be summed up :—

The Lakes	1,490 miles.
Hudson River	150 ,,
Delaware	100 ,,
Mississippi	2,200 ,,
Missouri	2,500 ,,
Ohio	1,000 ,,
Tributaries to the Mississippi ...	5,000 ,,
Total	12,440 ,,

It will easily be seen, from the foregoing statement of physical geography, how varied must be the climatic differences of the United States. Not only is there an enormous superficial area to be taken into account, varying from 50° to 25° lat., but the whole of this area is acted upon by many natural influences, such as the proximity of two great oceans, the Atlantic and Pacific, the gigantic chains of mountains, and the still more gigantic river basins. The consequence is, that climate in the United States frequently shows the most contradictory phases. "A summer heat of the fiercest character, as at Fort Miller, San Joaquim Valley, California, is but a few miles removed from a season of even more extreme refrigeration, cold enough to require winter clothing at the midday of the summer." As an evidence of the intensity of the climatic changes, it is stated that the mean temperature of New York is the same as that of Liverpool, yet the difference between the mean temperature of the three summer months and that of the three winter months is twice as great in New York as in Liverpool. Throughout England the heat of summer is insufficient to ripen Indian corn, while the ivy that grows luxuriantly in England can scarcely survive the severe winters of New York.

Chapter II.—Coal Basins.

Like every other country which has obtained any degree of industrial supremacy, America depends principally upon her coal measures, which, even taking into account the enormous extent of territory covered by the American flag, are a matter of wonder both to the geologist and industrial observer. Nature was in one of her most bountiful moods when she stored up such vast reservoirs of fuel for the future States, for there is no country on this earth which possesses coal-fields of such extraordinary thickness and extent. Though comparatively young in years, America already stands second of the coal-producing countries of the world, Great Britain being the first. Before going into the details of the American coal-fields, it will be well to give a general outline of their extent as far as known; for it must be borne in mind that the progress of coal discovery has been rapidly developing, as the more recent States in the west have become settled. In 1845, for instance, the area of coal measures was stated to be 145,000 square miles, whereas in 1866 it was known to exceed 200,000; and in 1873 it was estimated at 291,485, with the strong probability of the existence of as many more in the west. The amount of coal contained beneath this surface may be fairly considered illimitable, for the Pennsylvanian coal-beds alone, which occupy only 12,472 square miles out of the number, are estimated to contain a supply which, at the present consumption of 20 or 25 million tons per annum, would last for 640 years, even if 50 per cent. were allowed for waste.

The coal-beds of the United States may thus be summarized, taking them from east to west:—

1. The *New England* field, which occupies an area of 500 square miles in the States of Vermont, Massachusetts, and Rhode Island. The coal-beds, which consist of anthracite, or stone coal, underlie the cities of Providence and Newport, but they have been worked in a desultory manner and are not very important commercially.

2. The *Pennsylvanian* anthracite field is of limited extent, only 470 square miles, but of enormous productiveness and value. There are also very large bituminous beds in Pennsylvania to which allusion will be made further on; and though the anthracite coals of the United States bear no proportion in the extent of the measures to the bituminous coals, they possess features of remarkable interest, no country in the world being able to show such a development of anthracite, or so much energy in working it. These coals lie almost entirely within the State of Pennsylvania; commencing a little to the north-west of Philadelphia, and occupying in the main two oblong districts about 40 and 60 miles long respectively. The production for 1877 was as follows:—Wyoming district, 8,300,000 tons; Lehigh district, 4,400,000; Schuylkill district, 8,600,000; Loyalsock district, 23,000, the total yield of the year being 21,323,000. The whole workable amount of the Pennsylvanian field is estimated at 13,180,288,000 tons, one-third of which is in the area owned by the Philadelphia and Reading Iron and Coal Company, one of the largest of the American corporations. The coal strata have

been geologically much disturbed, the result of which is that the beds lie near the surface (requiring no very deep coal-pits) and that they are of extreme thickness —one of them, indeed, called the Mammoth Vein, varying from 40 to 100 feet. In the north-eastern portion of the State, the whole district underneath the Lackawanna Valley is completely honey-combed with anthracite workings, the towns of Carbondale and Scranton, with a population of about 50,000, being built on them; and the coal is carried away by a most ingenious railway, called the "gravity line," which runs over the mountains for 16 miles to the shipping places by a series of inclined planes worked by twenty-eight stationary engines.

3. The *Alleghany* field is an enormous one, occupying 53,895 square miles in the States of Pennsylvania, Ohio, Virginia, West Virginia, Kentucky, Tennessee, Alabama and Maryland. All these coals are bituminous, or free-burning. Extending as this basin does through so many States, it is necessary to specify the individual areas a little more closely. (*a*) The Pennsylvanian coals are principally worked in the counties of Tioga and Clearfield in that State, the annual product of the first-named district being about 600,000 tons. (*b*) The Ohio field occupies 10,000 square miles in that State, coal being worked in upwards of thirty counties. The chief development lies in the south-eastern portion of the State, in the counties of Hocking and Athens, where it has given rise to a considerable iron trade. (*c*) The Virginian field is extensive, though not worked to the amount of which it is capable. It is apparently an

extension of the Ohio beds, the West Virginian coals, principally gas-coals, occupying an area of 16,000 square miles. The chief mines are found in the valleys of the Kanawha, and New River, and in the neighbourhood of the Ohio and Baltimore railways. There are also large beds of coal in Virginia, on the western side of the Shenandoah Mountains, and in the districts between the James and Potomac Rivers. (*d*) The Tennessee field is of very great extent, but is comparatively little worked. Its chief mining centres are on the Coal Creek River in Anderson County, not far from Chattanooga. (*e*) The Maryland field is largely worked at Cumberland, the annual yield being nearly 2 million tons. (*f*) The Kentucky field occupies the south-western portion of that State to the north of the Cumberland plateau, and is continuous with the beds of the Tennessee field. Kentucky is fortunate in sharing, in its eastern portion, some of the beds of the central field. (*g*) The Alabama field is also continuous with the Tennessee coal measures, a good deal of coal being mined in the valley of the Tennessee River, near Decatur, and sent by rail to the iron district of Nashville.

4. The *Central* coal-basin is of great importance, embracing 40,000 square miles in the States of Indiana, Illinois, Kentucky, Iowa, Missouri and Arkansas. (*a*) The Illinois field occupies the lion's share of the Central basin, the beds running across the state from Wilmington, near Chicago, in a south-westerly direction to Springfield and the Mississippi valley. There are more than 350 mines in this State, yielding annually 2 million tons. (*b*) The

Indiana field is continuous with that of Illinois on the east, and is worked in fifteen counties. The Central basin extends westward of the Mississippi into (*c*) Arkansas, where are 12,000 square miles of coal; (*d*) Iowa, where the beds are worked in thirty counties; and (*e*) Missouri, containing 23,000 square miles, some of the veins being of enormous thickness.

5. The *Northern* coal-basin is in the State of Michigan, occupying 12,000 square miles.

6. The *Western* basin is situated in the State of Kansas, where it underlies an area of 17,000 square miles.

In addition to these known and tolerably defined coal-basins, there are more or less productive beds in the Territories of Utah (yielding about 10,000 tons per annum), and Wyoming (47,000 tons), while coal measures are known to exist in Texas and Nebraska States, as well as in the Territories of Arizona, Montana and New Mexico. In the State of Colorado there are beds of anthracite and bituminous coals (though of tertiary and not carboniferous age) on the western sides of the Rocky Mountains, while considerable beds of the same age exist in California and Oregon, something like 350,000 tons being annually shipped at San Francisco.

It will thus be seen that in the coal-basins already worked, the United States possesses incalculable riches, without taking into consideration those which are known to exist, but which are biding their time for yielding up their treasures.

Chapter III.—Iron and Steel.

It is not difficult to predict, that with so large a stock of coal, the United States must possess also an extensive iron trade. Indeed, as in England, the iron and coal trades are the basis of American manufactures, and, to a great extent, the index of the current prosperity. America contains underneath her surface immense supplies of iron ore, beside which those of England are insignificant. This may appear somewhat paradoxical, as the English production amounts annually to some 16 million tons, while the American yield is only about 5 million tons. But whereas we have practically used up some of our districts, such as the coal measure ores of South Wales, America has only just scratched hers, and possesses such extensive deposits, that they must necessarily at some time or other feed a very large trade. Roughly speaking, the yield may be summarized as follows:

Coal measure or clay ironstone ...	750,000 tons.
Hematites and oxides of iron, viz. :—	
Lake Superior deposits	1,000,000 ,,
Lake Champlain ,, ...	350,000 ,,
Cornwall Banks ,, ...	150,000 ,,
Missouri ,, ...	250,000 ,,
New Jersey ,, ...	400,000 ,,
Brown and red ores in different States	1,200,000 ,,
Sundries	500,000 ,,
Total	4,600,000 ,,

The *clay* ironstones which figure first in this list are

principally found in South Ohio and North Kentucky, in the district known as the Hanging Rock; and there is also a vein at Johnstone, Pennsylvania, the yield being about 40 per cent. of iron. The kind of clay ironstone known as blackband is worked in the Mahoning valley, in that of the Tuscarawas (Ohio), and as far south as the coal fields of Alabama.

Specular *hematite* ore is found near Lake Superior and Lake Champlain, in the former district between Escanaba and L'Anse, with still more extensive deposits in the vicinity of Ishpenning and Negaunee. It is rich in iron—from 60 to 66 per cent.—though a good deal interspersed with blocks containing very poor ore. Most of this Lake Superior ore is used in the furnaces at Pittsburg, in Pennsylvania, the great drawback being the distance of transportation, which is 790 miles. Notwithstanding the expense caused by this, these ores are much in request on account of their freedom from phosphorus, which makes them particularly adapted for producing Bessemer pig for steel.

The ores found at Lake Champlain (the boundary between the States of New York and Vermont) are nearly of the same kind as those of Lake Superior, Port Henry, on the western shore, being the shipping port. A similar class of iron ore is worked in Missouri, the locality known as the Iron Mountain being one of the largest known deposits in the world. It is a nearly pure peroxide, containing 70 per cent. of metallic ore, almost free from any admixture of foreign matter, and having a thickness in some places

of 70 feet. A little to the south of this are the iron deposits of Shepherd Mountain, Pilot Knob and Cedar Mountain, all rich in metallic iron.

Magnetic ore is largely developed in New Jersey, with a percentage of iron of about 55, but possessing so much phosphorus as to make it unfit for Bessemer steel. The same ores are found in Massachusetts, where the "Iron Hill" at Cumberland is a mass of ore 500 feet long and 104 high, yielding 35 per cent., but remarkably free from phosphorus and sulphur; also in Rhode Island and Vermont; and to some extent in the Smoky Mountains in North Carolina.

Brown hematites abound in Pennsylvania, the largest deposits being at the Cornwall Banks in Lebanon County, about 85 miles west of Philadelphia. It is from these ores and those of the same character in Montgomery County on the east bank of the Schuylkill, in Berks and Northampton Counties, that the busy ironmaking district of Lehigh is supplied. These ores are not particularly rich, and it is singular that Pennsylvania, which is the seat *par excellence* of the American iron trade, should possess the poorest ores of any of the States; but the real reason of her superiority is, that she has made better use of them, and possesses also such inexhaustible beds of iron-making coal. Virginia contains large tracts of brown hematites, in several localities in the Appalachian or Alleghany ranges. The cost of mining in this State is very low, wages having been greatly influenced by the old conditions of slavery. The same brown ores are pretty abundant

in Alabama and Georgia in the districts served by the Alabama and Chattanooga railway.

The latter State, as well as Tennessee, possesses extensive deposits of ore known as *fossiliferous*, of which the Red Mountain, near Birmingham, is a very curious example for its enormous thickness; though its percentage is not very high, being only from 33 to 50 per cent. In addition to these already worked districts, iron ore is found also in the States of Connecticut, Arkansas, California, Indiana, Iowa, Kansas, Minnesota, Maryland, Texas, and Wisconsin; and in the Territories of Alaska, Arizona, Colorado, Dakota, Montana, Utah, and Wyoming. With such enormous mineral deposits, whether well defined or more conjectural, it is no wonder that the United States has developed an iron trade of national importance. In every way indeed, nature has been bountiful; for, to match the iron ores, there are boundless seams of coal ready to be worked in conjunction with the iron: and even in those States where coal is absent, vast forests serve as excellent substitutes. Of course the day will come when charcoal will be found to be too dear and too scarce to be used in this way, as it was with the English trade in Sussex and Kent; but everything is on such a large scale in America, that it will be a long time before this change occurs.

Of all the staple industries of the United States, the iron trade is perhaps the most remarkable, as showing the inexhaustible resources of the country, and the sudden leap which it has made into the front rank of the national wealth and occupations. To

mark the rate of increase in the production of pig iron, it is sufficient to mention that in 1852 it was 50,000 tons, while in 1879 it was 2,741,853 tons; and although the trade has great fluctuations, as with us, the increase within the last quarter of a century has been very extraordinary. In the manufactured iron we find the same strides. Of rolled iron, were produced in 1854,—736,280 tons, whereas in 1879 it amounted to 2,047,484 tons; and the same may be said of rails, and of steel, whether made by the Bessemer process or not. The following table shows that the number of blast furnaces for the production of pig iron is 713, and that their capabilities will enable them to turn out 5½ million tons per annum :—

	No. of furnaces.	Capacity in tons.
Pennsylvania	279	2,264,900
Ohio	99	863,320
New York	57	529,500
Michigan	34	268,160
Virginia	34	72,400
Georgia and Alabama	26	126,400
Maryland	24	98,700
Kentucky	23	138,300
Tennessee	22	99,400
Missouri	19	223,500
New Jersey	18	183,600
Wisconsin	14	109,700
Illinois	12	188,000
West Virginia	12	99,400
Indiana	9	71,500
Other States	31	102,450
Total ...	713	5,439,230

It is very seldom, of course, that all this number is

in blast at the same time; for in bad seasons not more than half the furnaces are producing. The American iron trade differs in some very important points from the English trade; one being, that the Catalan forge, which is the most primitive style of iron smelting to be found in any country, is still extant in the States, and there are upwards of thirty-nine of these forges where iron is smelted direct from the ore. This, however, can only be done when the ore is cheap and rich, and the charcoal fuel handy. It is said that 60,000 tons per annum are turned out from these, and that the produce is much in favour with the steel makers. Another essential difference between the English and American trade is, that a great majority of the production is smelted with anthracite coal. This, indeed, is the secret of the enormous superiority of Pennsylvania over the other States, for she possesses, as we have seen, inexhaustible beds of anthracite, far surpassing any other deposit of this nature in the world. The proportions of the various kinds of furnaces are as follows: charcoal, 271; anthracite coal, 226; bituminous coal, 218. The two latter are of course the most important, both in build and capacity, the charcoal furnaces being for the most part primitive and small; but, on the other hand, their number is so considerable, that a large proportion of the iron production of the States is from them. Thus, in 1876, there were:—

990,000	tons of	pig iron	smelted with bituminous coal and coke.
749,578	,,	,,	anthracite.
308,649	,,	,,	charcoal.

Notwithstanding the value of the anthracite beds in Pennsylvania, competition is gradually driving the iron trade from these districts to the bituminous deposits, where the coals and the ores associated with them are cheaper. In the Lehigh Valley alone there are fifty-one anthracite furnaces, and many of the Pennsylvanian works, both for iron and steel, rank amongst the most complete in the world, such as those of the Cambria Company, at Johnstown (between Pittsburg and Harrisburg), which turn out 80,000 tons of steel and iron rails per annum. The works at Bethlehem (fifty miles west of Philadelphia) are pre-eminent for their completeness, and especially in connection with the Bessemer steel process. Pittsburg itself (population 208,485) is a second Birmingham, and the centre of the iron trade of the New World. Amongst other adjuncts of the trade, it contains 33 large rolling mills, with a productive capacity of 400,000 tons, equal to one-eighth of that of the whole of the States. In New York State, Buffalo and Troy are the chief iron centres, the latter town containing the large Bessemer works of the Albany and Rensselaer Company.

Ohio has recently come to the fore as a (bituminous) iron producer. Upwards of thirteen new furnaces of the most approved height and construction, have been erected in the counties of Athens, Hocking, and Perry, where valuable beds of coal and ore exist. There are large works in Illinois, at Joliet and North Chicago, turning out some 50,000 tons a year, while in the adjoining State of Missouri there are furnaces at Carondelet, and large steel works (the

Vulcan) at St. Louis. It is, however, mostly in the Bessemer steel that the greatest advance has been made, not so much, perhaps, in the nature of the works, as in their completeness and scientific arrangement. There are now in the districts between Troy and St. Louis (that is, from New York to Missouri) eleven Bessemer mills with twenty-two converters, with a capacity of production of 550,000 ingots of steel per annum. The advantage possessed by the American steel makers is, that they have been able to profit by the experience of the English and Swedish nations, and to begin their Bessemer trade, as it were, full grown.

As regards the production of iron, it must be remembered that the wages of ironworkers in the United States are a good deal higher than those of England; but on the other hand, the cost of living and provisions is much higher also, and it is a serious question for the consideration of those who think of emigrating from the Old World to the New, whether they will benefit themselves by so doing.

The various manufactories of wrought iron are widely distributed throughout the States. Bar iron is produced in twenty-four States, to the amount of nearly three-quarters of a million tons. There are 220 bar and hoop iron mills, of which Pennsylvania again heads the list with 84. Plate and sheet iron are manufactured in fifteen States, though none is made south of Kentucky or west of Missouri. Pennsylvania turns out more plate and sheet iron than any State, producing in fact more than 60 per cent. of the entire quantity made in the Union.

Chapter IV.—Mining Industries—Precious Metals and Quicksilver.

It is given to very few countries in the world to be producers of gold and silver on a large scale; but in this respect nature has been so bountiful to the United States, that the mining industries arising from these valuable metals are equalled in no other localities at the present date. The enormous riches contained under the head of gold alone in the States may be imagined, from the fact that the yield of 1879 was $38,900,000 (see equivalents of money, p. 100), and of silver, $40,812,000; total, $79,712,000; and that the amount of metals deposited at the mints and assay offices up to that date had reached the gigantic sum of $1,238,387,536.

Gold and Silver, which we must take together, are found in the following States:—California, Nevada, Colorado, Montana, Dakota, Idaho, Oregon, Arizona, Utah, New Mexico, Washington Territory, Michigan, North Carolina, Georgia, Alabama, and Tennessee. It will be readily seen that the gold and silver-bearing districts are mainly found in the Western States, and especially those through which run the great chains of the Rocky Mountains, and thence slope towards the Pacific coast. As, however, the supply of gold, previous to 1846, came almost entirely from two or three of the Southern States, viz., Carolina, Georgia, Alabama and Tennessee, it will be well to notice these districts first. The North Carolina gold discoveries date from 1824, the gold field occupying an area of about 12,000 square miles, and the principal

mines being found upon a belt of granite which runs across the State, near the towns of Queensboro' and Charlotte. There are about 140 mines, more or less developed; but as they have been worked in a very desultory manner, quite different from the scientific undertakings in the Western States, the production of North Carolina and the adjoining States has always been fluctuating. Nevertheless, the total yield of these States up to 1879 has been considerable, viz., Alabama, $219,120; Georgia, $7,608,250; North Carolina, $10,527,691; South Carolina, $1,389,983; Tennessee, $82,267; Virginia, $1,663,345. The gold field of the latter State is a continuation of the Appalachian gold field, which extends from the north of the Potomac into Alabama, the width of the belt, where it is crossed by the Rappahannock River, being about twelve miles. The ores are very plentiful, though not of the richest quality, and the mines, chiefly situated in Fauquier County, are worked with considerable energy.

The gold districts of the Western States date their discovery from as short a time back as 1848, California being the first, succeeded by Nevada, and within the last half-dozen years by Arizona, Dakota, New Mexico, Colorado, and Oregon. The following table gives the yield of the Western States in 1879, for both gold and silver:—

	Gold.	Silver.
California ...	$17,600,000	$1,373,703
Nevada	9,000,000	67,019,788
Colorado ...	3,225,000	18,926,099
Montana... ...	2,500,000	3,108,401

	Gold.	Silver.
Dakota	2,420,000	—
Idaho	1,200,000	624,295
Oregon	1,150,000	3,232
Arizona	800,000	1,125,394
Utah	575,000	8,409,253
New Mexico ...	125,000	1,796,517
Washington Territory	75,000	—
Wyoming ...	—	11,793
Nebraska ...	—	749,730

The Californian gold field, which extends over seven degrees of latitude, covering with its longest axis a distance of 500 miles, includes an area larger than the State of New York. The mines of California, Oregon, and Nevada are more or less situated on the ranges of the Sierra Nevada and the Cascade, the principal Californian mines being in the counties of Yuba, Nevada, Calaveras, Sierra, Butte, Shaster, Placer and Inyo. Perhaps the most famous of all the American mines, and indeed we may say of the world, are in Nevada, near Virginia City, which stands 1,500 feet above the Carson Plain. The mountains here are traversed by a wonderful vein or lode, excessively rich in gold and silver. It is called the Comstock Lode, and it is worked in the most complete and scientific manner at about nine large mines, the deepest and hottest in the world. Some of these mines, such as the Consolidated Virginia and the California, are fabulously rich in ore, and have been the cause of intense speculation. A few of these "bonanzas," as they are called, have realized for their owners, fortunes which read more like an Arabian Nights' tale than anything else. Indeed, the two

mines just named produced, in four or five years, precious metal to the amount of $104,000,000! The entire yield of the Comstock Lode from 1858, when it was first worked, to the end of 1878, was $291,171,605, to which must be added the "tailings" or refuse, bringing the total to $323,673,605. The ramifications of the mines extend for 200 miles in aggregate length, and are drained by an enormous tunnel called the Sutro tunnel, but for which they would have been unworkable several years ago.

The Colorado silver mines are extraordinarily rich, and both from their position and rapid development are very remarkable. Leadville, on the Arkansas River, the chief mining centre, is placed at a height of 10,000 feet amongst the mountains, and has grown up with mushroom celerity. One of the most wonderful features of American life is this quick growth of towns, and especially those which are dependent on mining industries. The Western States are full of instances of places which have sprung up in a desert, and in a year or two's time appear full grown, with large and busy populations. It will be seen that by far the greatest part of the American silver supply comes from the States of Nevada and Colorado, amounting in 1879 to $85,945,887. Arizona is fast coming to the front as a great silver producer, some of the mountains in that State being of marvellous richness. A ton of rock from the Jackson Stonewall mine yielded $15,000 worth. The only yield of silver in any quantity from other States is that of Michigan, which contributed $180,000 worth from the neighbourhood of Lake Superior.

The precious metals obtained from the Western States mines are for the most part shipped at San Francisco, in California, in the shape of gold and silver bars, gold and silver coin, gold dust, Mexican, Peruvian, and American dollars. In 1878 the value of these shipments was $6,857,480, their destinations being the Eastern ports of the Union, England, China, Hamburg, Calcutta, etc.

Comparing the production of gold and silver throughout the world, the annual average yield of the United States is estimated at $83,000,000; of Australia, at $29,000,000; of Russia, at $18,000,000; of Central America, at $27,000,000; of South America, at $27,000,000.

QUICKSILVER is a very important article of production from the States of California and Nevada, where it is found in the shape of cinnabar or ore of quicksilver, in association with sulphur or borax. There are over twenty mines, of which some are exceptionally valuable. The New Almaden mine is situated on the Sierra de Santa Cruz, a little to the south of San Francisco, and has been so productive that it has quite driven the Spanish mines out of the market. The yield of this one locality is about 20,000 flasks (of 75 lbs. each), and of the total quicksilver district from 75,000 to 80,000 flasks. It is, however, a fluctuating metal as an article of commerce, as shown by the fact that England imported in 1875 about $3\frac{1}{4}$ million lbs., valued at £670,000, whereas in 1877 the quantity imported was $3\frac{1}{8}$ million lbs., and the value only £363,000. Most of the workmen in the quicksilver mines are Chinamen, who indeed are

universally found throughout the gold and silver mining districts, and particularly in those where operations on a large scale have been carried on and the ground is supposed to be nearly exhausted.

The Chinese have such an unfailing fund of patience and perseverance, that they generally succeed in making a living where the white man cannot.

Chapter V.—Copper, Lead, Zinc, and Petroleum.

After the marvellous resources of the United States in precious metals, it would be surprising if we were to find a deficiency in metals of less value.

Copper is one of the most plentiful of these, although, considering the immense area of the country, it is developed (or at all events worked) in comparatively few States. These are Michigan, Arizona, North Carolina, Virginia, Maryland, Pennsylvania, Vermont, Tennessee, Nevada, California, Maine, New Jersey, and Connecticut. Michigan possesses the lion's share, her copper mines being said to be the richest in the world, with the exception of those of Chili. The copper region occupies a tract of about 135 miles long, and from one to six broad, along the southern shores of Lake Superior, and the 27 mines opened here produce 83 per cent. of the whole yield of the States. These deposits were worked in

very ancient times by the Indians, but the date of the advent of the white men was about 1848. The annual yield of the Michigan mines varies a good deal, copper being a fluctuating article of commerce; but they have been steadily worked for several years past, and the production may be estimated at nearly 24,000 tons of ore, yielding some 20,000 tons of copper ingot. Some of the mines are very rich, the Calumet and Hecla mines in 1872 having yielded 8,000 tons of fine copper, while a single sheet of copper was found in the Minnesota mine weighing at least 250 tons.

In Virginia and the adjoining State of North Carolina there are three valuable copper lodes, called respectively the Northern, Middle or Peach Bottom, and Southern or Ore Knob Lodes, and in the latter State these lodes have been exceedingly productive. In the Eastern States copper is found, but not now worked, in Connecticut, at Sunbury, the abandoned shafts having been turned to good account at one time as a State prison; in New Jersey, and Maine, where, near the sea coast, a rich belt has been discovered recently. In Tennessee there are large mines at Ducktown, Polk Co., together with every appliance for smelting on the spot. Latterly valuable deposits have been worked on the Pacific Coast near San Francisco.

LEAD ore is extensively scattered over the States, being found in Connecticut, New Hampshire, New York, Pennsylvania, Virginia, Tennessee, North Carolina, Kentucky, Iowa, Illinois, Wisconsin, Missouri, Utah, California, Colorado, and Nevada. Until the recent discoveries in the four last-named States, the

most extensive lead deposits were in the upper valley of the Mississippi, a region of 4,000 square miles, lying in Wisconsin, Illinois, and Iowa; but the yield has fallen off of late years. The Missouri mines, especially those of Shibboleth and La Motte, have, in times gone by, yielded largely. The Virginian lead mines in Wythe County are rich, but have not been worked vigorously. The New Hampshire lead mines yield silver to a considerable extent, that of Shelburne giving 84 ounces to the ton of lead. But, as with the other metals, the Pacific States have quite surpassed the older lead districts. The deposits at Leadville, Colorado, are exceedingly rich in silver, the average yield being from 100 to 150 ounces per ton. Most of the lead from Utah, Colorado, Nevada, and Montana is taken to Pittsburg to be smelted. The total amount of lead produced in 1878 in the United States was 81,500 tons.

ZINC ores are worked principally in Pennsylvania, New Jersey, Missouri, North Carolina, Arkansas, Wisconsin, and Tennessee. Those of New Jersey and Pennsylvania are perhaps the richest in the States, a block having been exhibited in the Exhibition of 1851 weighing 16,400 lbs. Franklin and Sparta (N. J.) are the chief zinc producing localities, and it is also obtained largely from the Lehigh Valley, Pennsylvania. Here, too (near Bethlehem), are large zinc smelting works; but the great bulk of the trade is carried on in the Passaic district (New Jersey), and at La Salle in Illinois.

The PETROLEUM industry is one that has assumed enormous magnitude, and until very recently was

almost peculiar to America; but Russia, Austria, and Germany are now commencing to compete with her in this article. Petroleum, or rock oil, forms another of those subterranean sources of wealth which America possesses so lavishly. Until the year 1857 this valuable material was known by the name of Seneca oil, and used only as embrocation for bruises, while its yearly production was but 16 barrels; but in that year its illuminating powers became known, and the first oil well was sunk in 1859, at Titusville, Pennsylvania. The production rapidly increased to a fabulous extent, so much so that in 1873 it reached a daily yield of 21,568 barrels of 40 gallons each, or annually 7,878,629 barrels. Huge fortunes have been made (and occasionally lost) in petroleum speculations, for the supplies are not always constant, and a well which has up to a certain point yielded profusely, may suddenly become dry. Pennsylvania has been the chief source of petroleum, next to which come Illinois and Missouri, followed in a less degree by New York, West Virginia, Ohio, Kentucky, Tennessee, and Indiana. Large populations have grown up in the oil regions round Petrolia, and busy towns, such as Millertown, Oil City, Pithole, and Titusville; but they are not to be recommended as places of residence, partly from the nature of the pervading industry, and partly because an oil city is liable to be destroyed by fire in a few minutes' time. There are also wells at Pico and San Fernando, in South California. The magnitude of the petroleum operations may be imagined by the fact that some of the wells are 1,500 feet deep, and that when the oil arrives at the surface, it is conveyed to

cities like Cleveland, Pittsburg, and New York, the three great centres of oil refining, whence it is taken to the shipping ports for exportation. The cost of carriage of the oil from the wells is greatly minimized by the construction of long conduit pipes, the one from Millertown to Pittsburg being thirty-six miles in length. The average production throughout the States at present is about 35,000 barrels per day.

Chapter VI.—Textiles.

If there is one thing more than another which shows the intimate relations of countries with each other, it is the growth of Cotton in the United States, and the dependence of Great Britain upon this growth for at least three-fourths of the supply for her cotton manufactures. During the Civil War in America, Lancashire was nearly starving from the failure of these supplies, and it should be, therefore, a matter of the greatest interest to English people to understand to the full the vast importance of this branch of American produce. Amongst the many varieties of the cotton (*gossypium*) plant, which now furnish from differen countries the staple from which are spun our yarns, those that form the bulk of American cottons are known in the language of botanists as *G. Barbadense* and *G. Hirsutum;* in other words, the smooth and hairy leaved kinds. For commercial excellence, the

finest cottons in the world are of these kinds, which are grown principally in the Southern States, and are known as Sea Island and New Orleans cottons respectively. The Sea Island was first cultivated in America at the close of the last century, and obtained its name, because it was found to grow with great luxuriance in the belt of islands lying alongside the coast of Georgia, North Carolina, and Florida, where the soft maritime, frostless climate is admirably adapted to it, and where it grows, surpassing all others in the strength, length, and beauty of staple.

The Orleans cottons are generally known under the name of Middling Uplands, and are of a shorter staple. They are grown more inland, and are used for almost all kinds of cotton manufactures, as well as for mixing with more specific varieties.

About 12 million acres are planted with the cotton crop, and the average annual yield is from 4 to 5 million bales, the net weight of each bale being 440 lbs. Like all other agricultural crops, that of cotton is dependent on many circumstances of weather, but we may take the yield of 1876, or 4,669,288 bales, and that of 1879, or 5,073,531 bales, as fair average crops. Dependent as it is so greatly on climate, we naturally find it limited to certain of the Southern States, viz., Alabama, Arkansas, Florida, Georgia, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, Texas, and Virginia. The chief source of the cotton crop is Louisiana, which, with Mississippi and Arkansas, and the country drained by the Mississippi southward towards New Orleans, raised in 1879 about 1,187,365 bales. The next most prolific region is

that which finds its outlet southward through the Mississippi valley, mainly Tennessee, Alabama, etc., which produced 832,710 bales. The yield of Texas was 584,097 bales; of South Carolina, 599,032; and of Virginia, 561,468 bales. The principal shipping ports for the export of cotton are New Orleans, Savannah, New York, Charleston, Galveston, Norfolk, Boston, and Mobile; but it is noteworthy, that owing to the development of railways in the Southern States, those ports, such as Galveston and Savannah, are becoming busy cotton centres at the expense of the Northern ports, such as New York. Of the 5 million bales of cotton raised during 1879 in America, 184,945 were consumed in the cotton manufactures in the South, 431,842 were sent to the Northern cotton mills, and 4½ millions were exported; and of these last Great Britain took the lion's share.

It might reasonably be expected that as the cotton crop is essentially a Southern one, the bulk of the cotton manufactures would be found in the same States; but it is not so, the Northern States containing the great majority of the cotton mills. The reason of this has been, that the formation of the country, with rapid streams issuing from the hills, is more favourable to the providing of water-power than the slow, sluggish rivers of the South, added to which the conditions of the atmosphere in the North are also better suited to cotton spinning. Still there are mills and factories in the South, though only 181 to 694 in the North. Of the latter, the cotton manufacturing States come in the following order according to the number of mills: Massachusetts, Rhode Island, Con-

necticut, New York, Pennsylvania, New Hampshire, Maine, New Jersey, Maryland, Vermont, Delaware, Ohio, and Indiana; of the former, Georgia, Tennessee, North Carolina, South Carolina, Alabama, Mississippi, Virginia, Missouri, Kentucky, Louisiana, Arkansas, and Texas. The number of spindles in all these American mills is 9,539,364 (Great Britain contains 39½ millions, and France 4½ millions), and the quantity of cotton consumed in them is 576,742,753 lbs. At least three-fourths of the spindles are to be found in the six New England States, and of these Massachusetts is *par excellence* the Lancashire of America, possessing 206 factories and nearly 4 million spindles. The principal of the cotton spinning towns are Lowell, Fall River, and Lawrence, all in Massachusetts; Providence, in Rhode Island; and Cohoes, in New York. Take Lowell, which is situated on the Merrimack river, as an example of an American factory town, and we shall find that it contains a population of 50,000, all dependent on the cotton, woollen, hosiery, carpeting, and shawl manufactories carried on in some 88 mills, with some 800,000 spindles, and 18,000 looms. Cohoes is on the Mohawk river, and is another great seat of the cotton and woollen hosiery trade. The Harmony Mills here consume annually 30,000 bales of cotton, produce 80 million yards of cloth and cotton goods, and employ 4,000 operatives, so that it will be seen on what a large scale the industrial manufactures are carried on in these States. The American cotton factory towns are not the same dreary, ugly places as those in Great Britain. The mills themselves are hand-

some and well built; the towns bright, clean, and cheerful; while the character of the operatives stands very high for smartness of appearance, superior education and general respectability. The great trading corporations which for the most part own the American mills, take great delight in providing ample and good accommodation for their workpeople, with excellent results; the squalor, poverty, ignorance, and depressing appearance of an English factory town being entirely unknown in the United States. There is no restriction of labour, and the average working day is 11 hours in length, but in some of the States it is only 10 hours, as each State makes its own laws and regulations in these matters.

Though the cotton manufacture in the Southern States is very far behind that of the Northern ones in importance, the mills there are increasing, and it is likely that the trade will, to a considerable extent, gradually migrate to the localities where the cotton is grown. The recent introduction of a machine called the Clements machine, which saves an immense deal of trouble and expense in the preliminary processes of cleaning and ginning cotton, will probably help very much to the increase of spinning factories in the South.

The WOOLLEN manufactories of the States are more generally scattered throughout the country than those of cotton, there being woollen mills in at least thirty-eight States. At the same time, there is no special district affected by the woollen trade, as in Yorkshire, woollen and cotton mills being found alike in most of the textile towns. Massachusetts is again the head-quarters of the manufacture, followed by Pennsylvania,

New York, Connecticut, Rhode Island, New Hampshire, and Maine. There has been also a remarkable increase in this textile in some of the States west of the Alleghanies, such as Iowa, Missouri, Kansas, Minnesota, Oregon, etc. The total number of woollen mills and factories in the States is over 3,000, containing 14,000 broad and 20,000 narrow looms, with 1,900,000 spindles, and employing over 80,000 hands. The consumption of wool in America is large, but it is mainly furnished by flocks of home growth. The States which produce the best wool and in the largest proportions are Ohio, Pennsylvania, Virginia, Illinois, Iowa, Indiana, Missouri, Wisconsin, California, Texas, Michigan, New York, and Vermont. The cities of Boston, Philadelphia, and New York may be considered as the head-quarters of the woollen trade, as far as business is concerned.

New Hampshire, which is specially celebrated for its flannels and blanketings, stands also at the head of the list in the worsted manufacture, Manchester and Concord being its chief factory towns; the other States in which this branch of the woollens is carried on being Rhode Island, Pennsylvania, Connecticut, Massachusetts, New Jersey, Ohio, and Wisconsin. A very large and increasing carpet trade is also to be found in most of the same States; Pennsylvania, and especially Philadelphia, manufacturing Kidderminsters and Venetians, Massachusets making most of the Brussels and tapestry carpets, while New York has almost a monopoly in felt carpets. Philadelphia is noted for the number of its hand-loom carpet weavers. There is also a very large production of knitted woollen

goods, such as woven under-shirts, stockings, etc., of which Cohoes, in New York State, is the chief centre. There are some 20 mills here, producing annually nearly 3 million dollars' worth of this class of goods.

The SILK trade of the United States does not in any way equal that of cotton or wool in importance, though it has within the last few years greatly increased. There are about 150 silk mills of different kinds spread about in the States of New York, New Jersey, Connecticut, Massachusetts, and Pennsylvania, employing some 14,000 operatives; but the chief silk towns at present are Paterson (New Jersey), situated on the Passaic river, Northampton (Massachusetts), Hartford and South Manchester (Connecticut). In 1876 the amount of silk consumed in the New England factories was 1,284,860 lbs., while the product in the shape of sewing silk and silk goods amounted in value to nearly 27 million dollars.

The FLAX and JUTE manufactures are but of small importance, flax growing not being carried on in America to any great extent. Ohio and Illinois are the principal producers, but this class of manufactures is mainly limited to coarse goods, such as bagging, rope, twine, and tow. What there is made of fine quality, such as crashes and linen goods, is principally in Massachusetts and New York. The jute trade is very much in the same position, most of the jute mills being in New Jersey and Pennsylvania, in which latter State the manufacture of jute carpets is noteworthy. Jute has been grown with success in the southern States of Georgia, Louisiana, and Florida.

Chapter VII.—Agriculture.

It is a matter of difficulty to describe a continent so vast as America in all its agricultural bearings; and it will perhaps be best, therefore, to note the characteristics of each State or Territory as they occu- in alphabetical order, all the figures being taken from the census of 1870.

Alabama—area, 14,961,178 acres,* is a moderately fertile State, with a large percentage of the population engaged in tilling the soil. Its productions are Indian corn or maize, wheat, oats, rye, cotton, rice, sugar, and potatoes. The average size of the farms is 222 acres.

Arkansas—area, 7,597,296 acres, possesses some vast alluvial lands, remarkable for fertility; but in other places the soil is poor, and the climate is exceedingly changeable, The bulk of the population is agricultural, and the productions are maize, wheat, oats, rye, rice, sugar, tobacco, potatoes, and hay. Average of farms, 154 acres.

Arizona—area, 21,807 acres, can scarcely be called an agricultural State, though the value of production per acre is greater than that of any of the Atlantic States except New Jersey. Its chief products are maize, wheat, barley, and fruits, such as figs, oranges, and lemons. Average size of farms, 127 acres.

California—area, 11,427,105 acres, contains some of the richest land in the world, and can grow almost

* These figures do not represent the total area of the State, but only of cultivated land.

everything. Its products are wheat, barley, maize, oats, cotton, tobacco, rice, hops, hemp, tea, coffee, wine, olive, and fruits of every kind; and the average size of the farms is 482 acres.

Colorado—area, 320,346 acres, has some good grazing lands, but the greater portion is unprofitable for cultivation. The products are wheat, maize, oats, and barley, which thrive at an elevation of 7,500 feet. The average size of farms is 184 acres.

Connecticut—area, 2,364,416 acres, grows maize, oats, rye, buckwheat, wheat, barley, tobacco, and hay, while it furnishes great quantities of milk for the New York market. The valley of the Connecticut river has the richest land in New England. The average size of the farms is small, only 93 acres.

Dakota—area, 302,376 acres, is very well adapted for cereals, the ordinary yield of wheat being 30 bushels to the acre, although of such natural fertility is some of the land, and especially that of the Red River Valley, which divides Dakota from Minnesota (p. 42), that upwards of 70 bushels of Indian corn to the acre have been grown. Its products are wheat, maize, and oats, and the farms average 176 acres.

Delaware—area, 1,052,322 acres, cultivates maize, wheat, and oats, together with fruit, immense quantities of which are sent to the New York market. From 3 to 4 million baskets of peaches are shipped annually, and the yield of strawberries in 1874 was 7,470,400 quarts. Average size of farms, 138 acres.

Florida—area, 2,373,351 acres, possesses great quantities of swamp land, fit for the production of tropical crops. Wheat is very little grown, but a considerable

amount of maize, oats, cotton, tobacco and indigo. Florida is also one of the chief market gardens for New York and Philadelphia. Farms average 232 acres.

Georgia—area, 23,647,941 acres, is somewhat of the same character as Florida, the chief crops being maize, wheat, oats, cotton (in the production of which it is the second State), tobacco and rice. Average size of farms, 338 acres.

Idaho—area, 77,139 acres, has only about one-third suited for agriculture. Oats, wheat and barley are its chief cereals. Size of farms, 186 acres.

Illinois—area, 25,882,861 acres, is one of the most fertile grain producers in America, in 1873 being the first in the production of maize (56 bushels to every inhabitant) and oats. It also grows large quantities of wheat, besides barley, rye, flax, tobacco, hay, and produces extensively in garden and orchard yield and honey. The average size of farms is 128 acres, but some are of enormous extent, one farm in Ford County containing 40,000 acres.

Indiana—area, 18,119,648 acres, ranks fifth in the States as to farm produce, and in the yield of maize and wheat. Oats, rye, tobacco, vegetables, and great quantities of fruit are also grown. Average of farms, 112 acres.

Iowa—area, 15,541,793 acres, has a less acreage of barren land than any other State, and in 1873 was first in the production of wheat, second in maize, and third in barley and oats. Maize, indeed, is often so abundant, that it is burnt for fuel. Farms average 134 acres.

Kansas—area, 5,656,879 acres, is a State of great

fertility and with an excellent climate, though the variations of temperature are sudden and great. It produces maize, wheat, oats, hay, potatoes and tobacco, and in 1873 the average yield of maize was 39 bushels to the acre, greater than that of any other State except California. The average of farms, 138 acres; though many are of great size, and it must be remembered that while the area under cultivation is comparatively small, there are millions of acres waiting to be utilized as soon as sufficient population and means of transport are provided.

Kentucky—area, 18,660,106 acres, is a large grower of maize, and a moderate one of wheat, oats and rye, while its great staple is tobacco, of which it produces more than any other State. Hemp, too, is much grown. Average size of farms, 158 acres.

Louisiana—area, 7,025,817 acres, grows some maize, oats and wheat, but only in a small proportion to its industrial crops, which are cotton, sugar-cane and rice. Farms average 248 acres.

Maine—area, 5,838,058 acres, while producing maize and oats, vegetables, fruit (especially apples), maple sugar, and a considerable quantity of hay, is also a dairy farming State, and devotes much attention to the rearing of horses for the New York market. Average of farms, 98 acres.

Maryland—area, 4,512,579 acres, is by no means one of the leading agricultural States, except in the crop of tobacco, in which it ranks fifth. It produces, however, fair quantities of maize, wheat, oats and sweet potatoes. Size of farms, 167 acres.

Massachusetts—area, 2,730,283 acres, grows maize

as its principal cereal, and is a market gardening State; but the fact that only 72,810 people out of the 579,844 in the whole State are engaged in agriculture, shows that Massachusetts finds more profit in attending to her manufactures. Average of farms, 103 acres.

Michigan—area, 10,019,142 acres, has a good deal of fertile land, but more that is cold and unprofitable, with a rather severe climate. Nevertheless, Michigan grows large quantities of wheat, maize and oats, together with much fruit, particularly apples, pears and grapes, the orchard value of the State ranking much higher than could have been expected from its northerly situation. Average size of farms, 101 acres.

Minnesota—area, 6,483,828 acres, stands very high in its production of wheat, oats and maize. The enormous increase of the wheat yield in this State, which includes the famous Red River Valley, may be gathered from the fact that in 1850 only 1,400 bushels were grown, while in 1870 this had risen to 18,866,073 bushels. The average of the farms is 139 acres, but some of them in the Red River Valley are of gigantic extent; one in particular is mentioned as occupying 30 square miles. In 1878 an area of 20,900 acres was planted with wheat, the yield being 250,000 bushels. This district, which is is about 400 miles in length by 70 in breadth, may be said to be the richest wheat-growing land in the world.

Mississippi—area, 13,121,113 acres, has maize for its chief cereal, but its staple productions are cotton,

in which it ranks first in the States, rice, and sweet potatoes. Average size of farms, 193 acres.

Missouri—area, 21,707,220 acres, is a very productive agricultural State, growing quantities of maize, wheat, and oats, together with cotton, flax and tobacco. Size of farms, 215 acres.

Montana—area, 139,537 acres, contains large sterile plains, though many of the valleys are extremely fertile. Wheat and vegetables are the principal productions, and the average of the farms is 164 acres.

Nebraska—area, 2,073,781 acres, grows wheat, maize and oats, and is specially noted for its vegetables and fruits, which find a ready market at St. Louis. Average of farms, 169 acres.

Nevada—area, 208,510 acres, devotes more attention to mining than to agriculture, though there are some fertile valleys in the west. Barley and wheat are the chief cereals. Size of farms, 201 acres.

New Hampshire—area, 3,605,994 acres, has a somewhat rigorous climate, and busies itself more with manufactures. Maize and oats are grown, and a good deal of maple sugar is produced. Average of farms, 169 acres.

New Jersey—area, 2,989,511 acres, yields a considerable supply of maize and oats, but its specialty consists in market gardening for New York and Philadelphia, and in the value of which it stands second of the States. Cranberries are largely grown here. Average of farms, 98 acres.

New Mexico—area, 833,549 acres, although containing some fertile land, requires too much irrigation

to make it very productive in cereals. The average of farms is 186 acres, though there are several of over 1000.

New York—area, 22,190,810 acres, occupies a very foremost place in agriculture, growing great quantities of oats, maize, wheat, barley, buckwheat and rye. In the western districts market gardening is extensively carried on, and dairy farming in the northern and southern counties. Average of farms, 103 acres.

North Carolina—area, 19,835,410 acres, has maize for its chief cereal, though its semi-tropical climate suits better for cotton, rice, tobacco, sugar-cane and sweet potatoes. Pea- or ground-nuts are raised in immense numbers for exportation. Average size of farms, 212 acres.

Ohio—area, 21,712,420 acres, is a great grazing country and large grain producer, maize, wheat and oats being the chief cereals. Fruit is also abundant, the apple crop in 1872 yielding 23 million bushels, and the peach crop 405,619 bushels. Average of farms, 111 acres.

Oregon—area, 2,389,252 acres, is more of a stock-raising and dairy-farming country, though producing maize with a very large yield to the acre. Average of farms, 315 acres.

Pennsylvania—area, 17,994,200 acres, grows more oats than anything else, followed by maize, wheat and rye. Only about 25 per cent. of the population is engaged in agriculture, the rest principally following coal mining and iron trades. Average of farms, 103 acres.

Rhode Island—area, 502,308 acres, besides being of small extent, is so much devoted to manufactures, that it can scarcely be called an agricultural State. The land is better adapted for grazing and tillage, though, from careful culture, it produces considerable crops. Average of farms, 94 acres.

South Carolina—area, 12,105,280 acres, has maize for its chief cereal, though the leading product is rice, together with cotton. Average of farms, 233 acres.

Tennessee—area, 19,581,214 acres, grows great quantities of maize, and a fair amount of wheat and oats. Tobacco, rice and cotton are the other crops, as in the last-named State. Size of farms, 166 acres.

Texas—area, 18,396,523 acres, is abundant in maize, but scarcely suitable for other cereals. Cotton is an important product, as also rice and sugar-cane, and many semi-tropical fruits flourish here. Average of farms, 310 acres.

Utah—area, 148,361 acres, cannot be called an agricultural State. Hardly one acre in fifty in its natural state will pay for cultivation, though an extensive system of irrigation has made a garden of the desert about Salt Lake City. Average of farms, 30 acres.

Vermont—area, 4,528,804 acres, grows oats and maize, and is a considerable producer of cheese and maple sugar. The farms average 134 acres.

Virginia—area, 18,145,911 acres, yields maize, wheat and oats, but the great staple is tobacco, in which it ranks second of the States. Average of farms, 246 acres.

Washington—area, 649,139 acres, grows wheat and oats, but the scanty rainfall makes large tracts sterile. It is a good country, however, for stock raising. Average of farms, 208 acres.

West Virginia—area, 8,528,394 acres, is a fairly productive State, yielding maize, wheat and oats. Average of farms, 214 acres.

Wisconsin—Area, 11,715,321 acres, grows large quantities of wheat, oats and maize. Average of farms, 114 acres.

Wyoming—area, 4,341 acres, has so much barren and elevated plateau land, that it scarcely figures at all in agriculture. The average of farms is but 25 acres.

We may sum up the annual average yield of the States in the following table :—

	Acres.	Yield in bushels.	Yield per acre
Maize or Indian corn	41,592,858	1,113,593,625	26·7
Wheat	23,391,936	281,743,612	12
Oats	10,613,527	295,883,990	27·9

Maize, commonly spoken of as "corn," is a crop of enormous importance, of the value of some $500,000,000 per annum, and is one of the principal bases of American food, it being used in a variety of appetizing dishes. It is imported in increasing quantities to England for corn flour, also for brewing and distilling purposes.

With such vast supplies of wheat to dispose of, it is no wonder that the United States has become the granary of the world, nor that they should be the recognised source upon which England and other European countries fall back to feed their redundant

populations. In 1878 the export of cereals alone reached $181,777,000. England alone imported 36 millions cwts. of wheat from America in 1879, and the yearly demand, as well as the yearly supply, seems more likely to increase than to diminish. The conditions of American agriculture are not only of vast interest to that country but also to the inhabitants of about six-tenths of the civilized world.

Chapter VIII.—The Provision Trade.

We have seen how great are the resources of the United States in providing cereals for the population at home, as well as for a large proportion of the European countries. Indian corn and wheat, however, are not the only food supplies for which America is famous; and if she may be called the granary of the world, she may with equal justice be looked upon as the larder of England, so enormous and rapidly increasing is the provision trade, with which she is able to meet the demands which Great Britain makes every year. The four great divisions of this trade are pork, flour, dairy produce, and canned foods. The number of live stock in the States in 1878 was as follows:—

Horses	10,938,700
Cattle	33,234,500
Sheep	38,123,800
Pigs	34,766,100

Of this vast number of animals, a good proportion is annually exported (in 1878 to the amount of $5,844,653, of which about 55 per cent. goes to Great Britain and Ireland.) The magnitude of the provision trade is seen principally in such articles as bacon and ham, pork, beef, butter, cheese, lard and preserved meats. Whether the cattle are to come to England alive or dead, they are first of all raised in the stock-feeding regions and prairies extending westward through Nebraska and Wyoming over the fertile Laramie Plains to the Rocky Mountains, and on for a thousand miles farther through Utah, Oregon, and Washington Territories, where is room for more than five times the live stock now raised. These vast American grazing grounds run from the Gulf of Mexico for 1,500 miles or more, over the international boundary line into Canada. Texas rears 5½ million head of cattle; Colorado has 30 million acres adapted for growth of grain, cattle or sheep. Wyoming has 55,000 square miles of grazing, and the same may be said of Montana. Over these wide areas herds of cattle roam, numbering from 1,000 to 50,000 head, feeding ground being plentiful, and the only necessaries to be looked after being a good supply of water and some salt. From the pastures there is, during the summer and autumn, a constant stream of cattle to some of the depôts on the Union and Northern Pacific Railways, to be taken to Chicago, Kansas City, St. Louis, or the Atlantic ports, thence to be conveyed to London, to which place it is computed that the cost of carriage of a bullock from Colorado is from £10 to £12. Great numbers of cattle, however, go no

farther eastward than the Indian-corn regions of Illinois, Wisconsin, Iowa, Minnesota and Missouri, where they are cheaply fattened for killing, some 2,000 carcases being forwarded every week to British markets. They are shipped at New York, New Jersey, Chicago and Philadelphia to London, Liverpool, or Glasgow, and brought over in fine condition in large refrigerating steamers, each of which carries from 800 to 3,000 quarters. Fresh American meat can thus be sold at British ports at about 6*d.*, per lb. leaving a profit; but there is little chance of the British consumer getting it at anything like a reasonable price, as long as he is in the hands of the British butcher.

The greatest speciality, however, of the American provision trade is that of hog-packing, which is carried on to an enormous extent at Chicago, Cincinnati and a few smaller cities, the former being the head-quarters of the trade. The great hog-raising States are those which produce the most maize or Indian corn, and the bulk of the hog-packing is carried on in the winter, although of recent years there has been a summer business also at Chicago. In this city alone the number of hogs killed and converted into pork in 1878 was 4,009,311. The operation of killing and packing is done with such celerity as to be almost magical, it being commonly stated that a hog enters at one end of the establishment and emerges in a few minutes packed in a barrel. One firm in Chicago packs during the year 140,000 tons of hogs, enough to afford 45 freight loads daily; and to accommodate the continual stream of animals which arrive in the city, stockyards have been constructed which cover

350 acres and will hold 118,000 at a time, upwards of 7 million hogs annually passing through them. The chief centres of the pork-packing trade are Chicago (Illinois), Cincinnati (Ohio), Kansas City, St. Joseph and Hannibal (Missouri).

The trade in canned provisions is also very large and rapidly increasing. Chicago is one of the leading places for making tinned beef, one firm putting up daily 40,000 to 50,000 cans, in tins made on the premises, holding 2lbs. to 28lbs. each. Three hundred beasts are killed and dressed in the day here, while the St. Louis Beef Canning Co. (Missouri) slaughter daily during the season 1,000 cattle. Others besides the Western States are gradually entering the tinned provision trade. On the Pacific side, the State of Oregon is largely embarking in it, and great quantities of tinned beef, mutton, and salmon from the Columbia River, are prepared at Portland, the capital, for exportation. The Eastern States, and especially those of New England, carry on large industries in canning fish, oysters, vegetables and fruit, and we in England are indebted to America for many of these cheap and appetizing delicacies.

Cheese is another article of which the production and export are almost fabulous in extent, cheesemaking being carried on by the co-operative factory system, that is, the combination of a number of farmers to supply milk to a certain factory, each one sharing in the expense and the profits. In 1874 New York State had 1,139 of these cheese factories, at which 23,000 farmers delivered the daily milk of 308,352 cows; but at the present time it is estimated that

over 30,000 farms are laid under contribution for these supplies. At Little Falls (New York) more than 25,000,000 lbs. of cheese from the factories annually change hands, and still more at the town of Utica. In 1878 the American cheese exports amounted to 134,000,000 lbs.

Mention has been made in the preceding chapter of the grain that is grown in the different States. In addition to the capital and industry involved in this, the milling or "flouring" interests are of immense importance. There is scarce a town of any size, especially if it possess water power, that does not contain, more or less, large flour or grist mills, while in some of the States the preparation of flour for export is on a huge scale. The State of Minnesota is one of the busiest in this direction, being almost entirely occupied with milling and timber cutting. There are in this State 405 flour mills, of which 105 are run by steam and the remainder by water power. When working at their full capacity, these mills, which are principally at Minneapolis and St. Paul's, will produce 111,167,550 barrels of flour, consuming in the process 55,837,500 bushels. In connection with the export of flour and grain, it should be mentioned that a vast industry is caused in the matter simply of loading and forwarding. Chicago is again the leader in this branch of business, and the warehouses for storing, and the elevators for loading and unloading, are on a gigantic scale.

Sugar is an article of considerable importance as an American staple, though its growth and manufacture is almost entirely limited to one State, that of Louisiana, which possesses, in the delta of the Missis-

sippi, an area of 200 miles long by 100 broad, the finest land possible for the product of cane sugar. The yield in 1878 was 213,221 hogsheads, though the cane crop is somewhat fluctuating. In the Northern States, and particularly those which approach the Canadian border, such as the New England States and Michigan, there is a considerable manufacture of of sugar from the maple tree; but although the consumption is great, maple sugar is more a branch of domestic industry than a national one. The consumption of sugar in the United States in 1878 was 685,670 tons, and of molasses 43,812,509 gallons, but by far the largest portion of this was imported.

Tobacco, like sugar, is limited to a few of the Southern States as far as the growth and cultivation go, though, the Americans being a nation extraordinarily addicted to smoking and chewing, there is scarce a city of any size which does not include the preparation of tobacco and cigar-making as one of its industries. Kentucky, of which its inhabitants say "that the sun never shone upon a fairer country," is *the* tobacco-raising State, the soil suiting the plant so well that 1,400 lbs. have been produced from a single acre. In 1873 Kentucky yielded 152,000,000 lbs., which is about three times the amount produced by Virginia, the next tobacco-growing State. Before the separation of America from English rule, vast fortunes was made by the cultivation of tobacco, and an interesting description is given of those times and places in Thackeray's novel, "The Virginians."

Salt is an article of considerable abundance in many of the States, particularly the Western ones, as

though nature had provided the great stock-feeding areas with this necessary condiment for man and beast. Arkansas, Michigan, Indiana, and other States, have good supplies from salt springs, while Utah, Nebraska, and Nevada are furnished with inexhaustible salt basins. In the latter State, salt beds extend over 50 square miles in Esmeralda County, with incrustations of pure salt, and in the south-east there are "salt bluffs" 500 feet high, forming a mass of rock-salt 2 miles long and 1½ mile wide. Utah is also a great natural salt basin, the water of the Salt Lake, 100 miles long by 50 wide, being so salt that no fish will live in it.

CHAPTER IX.—FORESTS AND THE LUMBER TRADE.

No account of the industrial resources of the United States, however brief, should omit mention of the forests and woods, or of the great trade that is carried on in "lumber," or, in other words, timber. A saw-mill is about the earliest form of manufacturing civilization in the New World, and no community of colonists can begin life without it. The forests of America are so extensive and varied, that the use of wood is carried to a far greater extent than in England, where forests have well-nigh disappeared—and the consequence is that a large industry has grown up all over the States, first in sawing lumber or

the raw material; and secondly, in producing what may be called manufactured wood for staves, shingles, furniture, doors, sashes, axles, and a vast number of unconsidered trifles for farm and domestic use.

The forests differ in their extent, from the amount of clearing to which each State has been subject during the increase of settled population, and in variety, according to the nature of the soil and the climate.

Alabama possesses immense forests of yellow pine, and in *Arkansas* the cotton wood is the most common. *California* is not so rich in forests, though it has large growths of various kinds of pines, the size of some of them being on an almost incredible scale. A group called The Big Trees is celebrated throughout the world, the tallest of them being 385 feet high, and 93 feet in circumference. It is believed that the age of these giants must be nearly 2000 years. *Delaware* is noted for its cypress swamp, containing 50,000 acres of valuable timber. *Florida* is considered to be the best timbered State, as far as its forest area of 30,000,000 acres goes, though it is not such a great lumber State as many others. *Iowa* possesses about 3½ million acres of timber, which grows with great rapidity when planted in the prairies. *Maine* is one of the most densely wooded States, possessing more than 21,000 square miles, and some of its northern portion being as unbroken forest as nature made it. What with the wealth of wood and that of water, a great many hands are employed in lumber sawing and shipping. *Michigan* may be considered the typical lumber-land of the States, a great part of the northern peninsula being covered with a

dense growth of timber, in which the pine and other soft trees predominate. Bay City, with its population of 13,690, depends almost entirely on lumber; and the Saginaw Valley, at the end of which it is situated, is said to have yielded, between 1863 and 1878, nine thousand million feet of sawed lumber. The saw-mills are on a most complete scale, the average daily product of one special mill being 205,000 feet of boards, possessing also planing machines capable of dressing 100,000 feet of lumber; a heading machine (for casks) which can turn out 5000 pieces; a stave machine, with a capacity of 50,000 pieces; and a hoop machine, with a capacity of 10,000 pieces. The shipments of lumber from Bay City in 1878 were 525,282,098 ft., more or less, and of shingles, 187,699,380 ft. Most of the Michigan towns flourish by saw-mills or the shipping of lumber—Muskegon, for instance, a small town of only 8000 inhabitants, shipping annually 300,000,000 ft. of logs. *Minnesota* is another State, one-third of which is covered with timber, 21,000 square miles being included in the pine region. Water power being inexhaustible, we find the lumber trade very prosperous here, 318,509,285 feet of logs having been sawn in one year in the North Mississippi, St. Croix, and Duluth districts.

The importance of the trade may be gathered from the fact that in 1873 it was estimated that there were 25,832 saw-mills and lumber establishments, employing 149,997 hands, and that the annual value of the product was $210,152,327. More than one-half of this amount was turned out in the States of Michigan, Pennsylvania, New York, Wisconsin, Indiana, and

Maine. The variety of the trade, raw and manufactured, will be understood by the list of exports, which in 1879 consisted of boards, deals, planks, joints, laths, palings, curtain-sticks, broom-handles, shingles, staves, headings, hogsheads, barrels, firewood, hop and telegraph poles, logs, masts, spars, and household furniture of all kinds, to the value of 717 million dollars.

Chapter X.—Traffic Routes.

Like most other things in the United States, the traffic routes, whether by water or rail, are on a large scale, as befits a country, the home business of which ramifies over the greater part of an entire continent. No country in the world has such magnificent natural waterways as America, supplemented as they are by splendid canals; but for all that, the railway system has greatly superseded the water traffic, though business men are beginning to find out that, for bulky goods at all events, the advantages of rivers and canals have not been sufficiently recognised, and a reaction will probably take place in their favour. One of the chief water traffic routes may be called the Canadian water line, as America shares with that Dominion its superb system of lakes and rivers. It should be mentioned, however, that Canada found the money for the construction of works such as the Welland and St. Lawrence canals, without which

this route would have been impracticable. By means of the former the obstacle of Niagara Falls between Lakes Erie and Ontario, is overcome, and a ship can sail direct to Liverpool from Chicago on Lake Michigan; and in like manner the Canadians have constructed six canals on the St. Lawrence, so as to avoid the rapids on that river.

The Erie canal plays a great part in the transport of the traffic between the States and British North America, for, starting from Buffalo just above Niagara, it takes the commerce of Lakes Erie, Huron, and Michigan and conveys it to Albany on the Hudson River, by which means a clear waterway is gained to New York. Several important canals branch from this system, such as the Genessee Valley, the Oswego and the Chenango (connecting it with Baltimore and the Chesapeake), while northward from Albany runs the Champlain canal, communicating with the St. Lawrence by means of that lake.

The Mississippi is the next great system of inland navigation, the upper portion dealing with the navigation between St. Paul's (Minnesota) and St. Louis (Illinois). The rapids of Keokuk on this section are avoided by a canal. Between St. Louis and New Orleans, a distance of 1,250 miles, steamers and barges of considerable size ply, but large ocean vessels cannot get up further than Vicksburg, or under the most favourable circumstances to Memphis, and indeed seldom go beyond New Orleans. Of late years the size of ocean steamers has so greatly increased, that even this port, which has always had many difficulties to contend against in the filling up

the mouth of the Mississippi, has to a great extent suffered from the inability of the vessels to approach the port; but large works have recently been undertaken to deepen the entrance, so that New Orleans will resume all her former activity, and will become not only the leading cotton, but the grain port of the States.

The Missouri river, which joins the Mississippi at St. Louis, is navigable as far as Fort Benton in Montana Territory for small steamers, but the construction of the Central Pacific railway has caused the water traffic to fall greatly off.

The Ohio river navigation is one of the most important in the States, as it is the route by which the coal is taken from the Pennsylvanian and Virginian basins as far as New Orleans. The shipments of coal from Pittsburg by river amounted to 2½ million tons in 1876, and after a rise in the water (the Ohio being liable to considerable fluctuations of depth), 46 fleets, comprising 369 barges and carrying 4 million bushels of coal, have left Pittsburg within the space of three days. The importance of the Ohio river as a commercial highway may be understood, when it is considered that many places in the Western and South-Western States are dependent upon it for their produce, and that, bordering upon the upper stream of the Ohio, there are coalfields embracing a territory of 122,000 square miles. Near Louisville (Kentucky) there are falls which are evaded by the Louisville and Portland Canal.

The States of Tennessee and Alabama are both served by the navigation of the Cumberland and

Tennessee rivers, which fall into the Ohio, the former being navigable to Nashville, and the latter to Decatur and Chattanooga. Shoals and low water, however, tend to partially destroy the value of the river system. The Wisconsin and Fox River navigation is an important waterway connecting the Mississippi with Lakes Michigan and Superior, and thus accommodating the States of Iowa and Minnesota. Other canals and river improvements are projected, and some of them are being carried out; but up to the present time the foregoing may be considered as the chief routes.

As there are over 75,000 miles of railways at present in operation in the United States, it would be impossible, and indeed useless, to name them all. Some of the leading routes on great railway systems should, however, be delineated, as not only does the transport of goods give rise to enormous industries, but very important effects are produced on trade, not only at home, but of other countries, by the construction of fresh lines. The manufacturing districts, such as those of New York and the New England States, are supplied most plentifully with railway communication, the principal companies being the Vermont Central between New London and Montreal (Canada), the Grand Trunk, a line which belongs more to Canada than to America, between Portland (Maine), Richmond and Montreal, from whence it runs on the north side of the St. Lawrence and the Lakes to Port Sarnia at the foot of Lake Huron. At this point, however, it is connected with a line to Chicago, called the Great Eastern, so that the Grand Trunk system is of importance as being the main

freight line and the carrier of provisions from Chicago to Liverpool. American intercommunication with Canada is also served by the Canada Southern Railway, which, beginning at Buffalo, crosses the Niagara River, runs along the north side of Lake Erie, and recrosses into the States at Detroit and Toledo.

The New York Central is a competitor of the Grand Trunk for the traffic of the North, and runs between New York and Albany, where it sends its connections east to Boston by the Hoosac Tunnel line, and north-west to Syracuse and Buffalo. The Erie line, with its innumerable ramifications, gathers up the traffic from Chicago and the Western States and brings it to New York. It must be borne in mind that the railway system in America has become very complex, and that a vast number of railways, originally independent, have become absorbed in the operations of one great company. Under these circumstances we find a system like the Erie, running, with its immediate connections, in all directions of the compass and conveying to the Atlantic seaboard, goods from such opposite quarters as Milwaukee, on Lake Michigan, and St. Louis on the Mississippi.

The Pennsylvania Company is another example of these overgrown railway corporations, for the lines controlled by it constitute the most extensive railway organization in the world. The number of miles under its direction is over 6,000, nearly 8 per cent. of the entire American system, while its capital consists of 8½ per cent. of the whole. Its railways, the main objects of which are of course to serve the iron and coal regions of Pennsylvania, pass through or extend into ten other

States, and have direct command of the connections between the Atlantic, the Lakes, and the Mississippi, the value of the commerce of this one company being equal to the entire foreign commerce of the States. As it has termini at New York, Philadelphia, Baltimore, and Washington, it has the lion's share of the traffic between the Western cities and these ports.

The Philadelphia and Reading Railway is perhaps the busiest coal-carrying line in the States, ramifying through all the districts and valleys of the Schuylkill coal region. This company indeed owns and works a large proportion of the collieries on its lines, and thus secures for itself a monopoly not only of produce, but also of carrying that produce to market.

The Gulf and South-Western States are, on the whole, well off for railway communication with the Atlantic States, though the country being sparsely inhabited and manufactures few, the network of local lines that characterize the North is absent. The two principal trunk lines are the Great Southern mail route between Washington and Memphis on the Mississippi, and the Mobile and Ohio line, connecting the port of Mobile on the Gulf of Mexico with that of Chicago on Lake Michigan. Chicago is also united with the South by another trunk line through Cairo and Jackson to New Orleans.

It is, however, when we get west of the Mississippi that we find the triumph of the railway system, by the carrying of the iron road for thousands of miles across the trackless desert and over gigantic chains of mountains until the Pacific slope is reached, with its busy mining cities and fertile valleys. By means of the

three continuous systems known as the Chicago, Rock Island, and Pacific, the Union Pacific, and the Central Pacific Railways, which run from Chicago to Omaha, Cheyenne, Salt Lake and San Francisco, there is a route without break across the whole continent from New York to the coast of California, a distance of 3320 miles. Other lines are carried from St. Louis through Kansas into Colorado, and south-west to San Antonio in Texas, near the borders of Mexico. There is nothing in the Old World to compare with these colossal railway systems, by which journeys are counted by days and not by hours, and on which the scenery, whether of prairie, mountain ridge, cañon, or cultivated valley, is on nature's largest and most splendid scale. The Americans view railway making from a different standpoint to that of the English. Our British lines have grown up as each town required the accommodation; but in the United States the railway is very often the first sign of civilization that appears, leaving the population to come after it, which it invariably does.

The proportion of railway mileage in the various groups of States in 1874 was as follows:—The New England States, viz., Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, and Connecticut, 5,509; Middle States, viz., New York, New Jersey, Pennsylvania, Delaware, Maryland, Columbia, West Virginia, 14,291; Southern States, viz., Virginia, North and South Carolina, Georgia, Florida, Alabama, Mississippi, Louisiana, Texas, Kentucky, Tennessee, and Arkansas, 15,602; Western States, viz., Ohio, Michigan, Indiana, Illinois, Wisconsin,

Minnesota, Iowa, Kansas, Nebraska, Missouri, Wyoming, Utah, Dakota, and Colorado, 34,882 miles; Pacific States, viz., California, Oregon, Nevada, and Washington, 2,339 miles. Considering that in the year 1830 there were in America just 23 miles of railway in operation, it must be admitted that this rapidity of increase is one of the most remarkable features of the country.

Chapter XI.—Seaports and Business Cities.

Commencing with the northern coastline of the Atlantic seaboard, we find that the State of Maine possesses but two ports of any consequence. The principal of these is *Portland*, the largest city on the coast east of Boston, and the terminus of the Grand Trunk Railway, in correspondence with which ocean steamers run to Liverpool and Glasgow. Its chief exports are flour and grain, shipped in great quantities, cattle, and petroleum, while ship-building is extensively carried on. Portland is also the head-quarters of the cod and mackerel fishing, in which Maine is exceeded only by Massachusetts. *Bangor* is a port with a considerable lumber trade, some little way up the Penobscot River. *Portsmouth*, the only port of New Hampshire, has the advantage of a deep harbour never impeded by ice, at the mouth of the Piscataqua River. It has a trade in lumber and fisheries. Massachusetts, as being the busiest manufacturing State,

possesses in *Boston* a port second only to New York as regards its foreign commerce; for, her harbour being rarely frozen over in winter, and having a very deep water front, she can load any number of vessels without delay. Boston is the business city of Massachusetts, the manufactures of which, in the shape of textiles, leather and leather goods, comprise nearly one-half the total value of all goods made in the State. The textiles represent over 92 million dollars, and about 28 millions are invested in the boot and shoe trade; and of the latter articles there were despatched from Boston in 1878 nearly 1,650,000 cases. The other chief shipments consist of cotton, wool, provisions, grain, and live cattle, and a great trade is carried on in connection with the fisheries. Boston has wonderfully increased in size. A hundred years ago its population was a little over 15,000, but now, with the adjacent towns of Charlestown, Roxbury, Dorchester, and Brighton, which have been absorbed into it, the city contains nearly 400,000 people. The other ports of Massachusetts are *Gloucester*, from whence hail the cod and mackerel fishing vessels, and *New Bedford*, the head-quarters of the whale fishery.

Rhode Island has three ports on its short coast-line, viz., *Providence*, its capital, a busy manufacturing town at the head of Narraganset Bay, with a large coasting trade; *Newport*, remarkable for its splendid harbour; and *Bristol*, where some fishing is carried on. In the State of Connecticut are *New Haven*, with a coasting trade, but principally given up to manufactures, and *New London*, interested in the whale fishery.

New York, the metropolis of the United States, occupies the whole of the island of Manhattan, but it has so immensely increased in size of late years that it may be said practically to include the neighbouring cities of Brooklyn and Jersey City (in New Jersey), which are connected with it by steam ferries. The population of New York proper in 1875 was 1,064,272 (in 1800 it was only 60,489); but to that will have to be added the population of Brooklyn, 483,252, and sundry suburbs, which will bring it to nearly two millions. New York, like London, does business with all the world. It has docks with 25 miles of available water-front, while Brooklyn has a water and warehouse frontage of 8½ miles in extent. In 1878 over 7,000 steamships, vessels of different nationalities, entered the port, and the value of the import trade in the same year was $303,186,867, and of the exports, $362,522,088. These great sums only concern the foreign trade, without taking into consideration the vast home trade and the gigantic manufacturing concerns of which New York is the centre. The bulk of the exports to Great Britain consist of cotton, grain, and petroleum, though there is also an enormous trade in bullion (gold and silver), copper, tobacco, and dairy produce, in which perhaps New York State exceeds that of any other. As the point from whence radiate numerous lines of steamers to all parts of the world, New York is the great emigrant port, the numbers (of all nationalities) who arrived there in 1878 being over 75,000, who were distributed to their various destinations westward. The communication between England and New York is con-

tinuous and rapid, and not a day passes without the arrival and departure of some of the great ocean steamers, such as the Cunard, Inman, or White Star Line to Liverpool, or the North German Lloyd to Southampton.

New Jersey State, although it has a considerable coast-line, has but few ports, its chief being *Jersey City*, which is united to New York by steam ferries, and, indeed, is practically identical in commercial and customs affairs. The Cunard steamers have their head-quarters here. Pennsylvania has no sea-board whatever; but the noble streams of the Delaware and the Schuylkill have placed the city of *Philadelphia*, which is 96 miles from the open sea, in the position of the third port of the States, ranking after New York and Boston. There are few, if any, cities in America which can show so continuous and rapid an increase in their business, or which present an appearance of such comfort and dignity as Philadelphia. Its chief exports are wheat, cotton and petroleum, and for the shipping of the former article, enormous elevators have been built at the junction of the two rivers. Besides these, there is a considerable live cattle export trade, together with fresh meat, refined sugar, agricultural implements, sewing machines, hardwares, etc. The exports in 1878 amounted to $48,379,031, and the imports to $21,048,197. As in most other American ports, the exports far outweigh the imports, especially since about the year 1873, showing how the country is more and more developing sufficient resources to supply her own wants, thus becoming less dependent on other countries, besides

having a large surplus to dispose of in foreign trade. Philadelphia is not only a great sea-port, but it is one of the chief manufacturing centres of the United States, the value of its industrial productions in 1878 being estimated at $115,000,000; the leading manufactures are iron and steel, engines and locomotives, clothing, carpets and woollen goods.

Delaware State, though it has a considerable coast-line bordering Delaware Bay, has but one port, that of *Wilmington* (where some ship-building is carried on), owing to the fact that the shore consists of long sandy beaches, affording no good harbours or offings. A little to the south-east of Wilmington, although a long way round, if we follow the projections and sinuosities of the Chesapeake Bay, is the busy port of *Baltimore*, the fourth in value in the States. The principal exports are grain (the shipments of which have very greatly increased with the last few years), cotton, tobacco, (Baltimore being the outlet for the Maryland and Ohio tobacco crops), provisions, and particularly lard and bacon. Most of the bacon goes to England, and the lard to Germany. This port is the terminus of the Baltimore and Ohio railway system, by means of which a large trade is brought to it from the Western States. A regular communication is kept up with Liverpool by the Allan steamship line.

Virginia has two ports, viz. *Richmond*, situated some distance up the James River, and possessing a considerable trade in tobacco; and *Norfolk* on the south side of Chesapeake Bay, which has a harbour open at all seasons of the year. A large fruit shipping trade is carried on here, and there is a government naval

yard at Gosport, very near it. In North Carolina are the ports of *Newbern*, on the Nense, 40 miles above its entry into Pamlico Sound, with a local trade of cotton and lumber shipping; and *Wilmington*, 34 miles from the sea on Cape Fear River. This port was very noted during the Civil War in 1863–4, for the numbers of blockade runners that successfully evaded the enemy, nearly 400 vessels having entered in the twelve months. In South Carolina is the port of *Charlestown*, built upon a peninsula between the Rivers Ashley and Cooper, and defended by four forts. It has a considerable shipping trade in cotton, naval stores and phosphates (for artificial manure). *Beaufort* and *Georgetown* are smaller places with a similar trade. *Savannah*, the only port of Georgia, and indeed between Charlestown and the extreme point of Florida peninsula, is a very rising town, owing to the development of the southern railways and the rapid communication with cities like St. Louis, in consequence of which it is drawing away some of the trade of New Orleans. A great quantity of the celebrated Sea Island cotton is shipped at Savannah, together with some grain, rosin and turpentine, while its position with regard to the West Indian Islands is gaining for it an import trade in tropical fruits, which find a ready market in the Atlantic States.

With the exception of *Jacksonville*, some 25 miles up the St. John's River, which has a considerable lumber trade, Florida possesses no ports on the Atlantic side; but on the Gulf of Mexico are the spacious harbours of *Appalachicola*, *Fernandina*, and *Pensacola*, the two latter towns founded by the

Spaniards in the 17th century. A little further east is the very important city of *Mobile* (Alabama), situated some 30 miles from the Gulf, and the outlet of 2,000 miles of river navigation. Mobile is, next to New Orleans, the largest cotton shipping port in the States, while its greatest import is that of coffee from Brazil. In the season of 1877–8, the shipments of cotton (exclusive of the home trade) were nearly 84 million lbs., of which 52 million went to Great Britain. Mobile is also the centre of a large lumber trade, but it is somewhat crippled by the want of a good ship channel from the harbour to the Gulf.

New Orleans (Louisiana) ranks sixth in American ports for the value of its imports, but in its exports of domestic produce, such as cotton, tobacco, sugar and rice, it exceeds those of Philadelphia, Boston and Baltimore combined. Considering that New Orleans is the natural gateway of 17,000 miles of the navigable waters of the Mississippi and its tributaries, it ought to be, and probably will be yet, the richest and busiest port in the States; but its progress has been much retarded by two causes: (1), the visitations of yellow fever, which are not to be wondered at, considering that New Orleans is one of the most neglected and filthiest cities in the world from a sanitary point of view; (2), that it is situated 100 miles from the entry of the Mississippi into the Gulf, at which there are very awkward bars, hindering the approach to the port of ocean steamers. This, however, has been to a great extent remedied by the erection of long jetties at the mouth, by which the passage has been deepened. The railway system has rather militated against New

Orleans, as great efforts are being made by the companies connected with St. Louis to send traffic over their lines to the Atlantic ports, such as Savannah, Norfolk, etc., and thus divert it from New Orleans. *Galveston*, and the small port of *Indianola*, are the two shipping outlets of Texas. The former is situated on an island at the mouth of Galveston Bay, and has a considerable trade with England in cotton, Texas cattle and hides, the export of the latter exceeding that of any other United States port.

We must now overleap a vast expanse of continent, until we arrive at the Pacific coast, the nature and contour of which are not favourable for great shipping trades. There are, indeed, along the whole coast-line, but two ports of any note. The first of these, commencing from the north, is *Portland*, in the State of Oregon, situated on the Williamette River, near its junction with the Columbia River. *Astoria* is the real port, as far as position near the sea goes, but vessels of a large tonnage can reach Portland, which is the shipping port of the wool, mining produce, grain, and canned salmon, for which Oregon is famous. At *Coos Bay*, near the southern boundary, coal is mined and shipped. *The* harbour of the west, however, is *San Francisco*, which is, both from capability and beauty of situation, worthy of California, one of the richest, most fertile, and most varied countries of the world. The wealth that passes through the port of San Francisco is prodigious. The main items of this trade are precious metals, such as gold and silver, with quicksilver, a vast proportion of which goes inland to the eastern cities of the States, though a very

large quantity is shipped to Great Britain, China, Japan, and Europe generally; wool, of which 52 million lbs., the produce of California, Washington, and Oregon, have been shipped in a single year; while the exportations of wheat, oats and flour, grown in the Pacific and Rocky Mountain States, are almost incredible. Nothing illustrates the singular mutations of industry more pointedly than this fact, that Great Britain, France, and other countries of the Continent are every year becoming more and more dependent for their bread-stuffs upon the shipments of San Francisco, a place which has grown up within the memory of the present generation. This port is the chief place of import for China and Japan teas and West Indian sugars, and rapid lines of steamers have been established to Australia and China, so that by means of the Pacific Union Railway system, the quickest route, as well as the most beautiful, to Australia from England is viâ New York and San Francisco. Nor should it be forgotten that the continuous arrivals of Chinese by the same routes are fast peopling the Pacific and Western States with the Mongol race, and that the Chinese element is in many cases displacing the Anglo-Saxon on his own ground.

We have seen in the foregoing pages what are the resources of the great American Continent, and to how great an extent they have been developed by the ceaseless activity of an energetic and ingenious people. As regards manufactured goods, it is impossible to allude to them except in the briefest manner, seeing that every town, almost every village, is a centre, more or less, of manufacturing industry. The

six New England States, which are almost exclusively devoted to manufactures, have a population of 3,362,000 dependent on their industries. Massachusetts, next to textiles, is particularly celebrated for its clothing industry, and more especially boots and shoes, which, in places like Lynn, Worcester, Newburyport, etc., are turned out by the million in factories and by machinery. The same principle is applied to watches, which are produced at Waltham in incredible numbers and sent to all parts of the world. Connecticut has a specialty for hardwares and tools, nor must we omit the sewing machine, of which the United States may be considered the home. Watch and clock making are also actively carried on in Waterbury and other places.

Vermont is known for its numerous tanneries, and for the manufacture on a large scale of carriages, and also of weights and measures.

Amongst other American specialities should be mentioned the manufacture of saws and axes. The lumber trade being, as we have seen, of such vast importance, it is a matter of course that the fitting up of saw mills becomes also a large industry, and we fied, therefore, extensive mill-factories for saws at New York, Boston, St. Louis, Bangor, Newark, etc., as also for American axes, which have a world-wide reputation. Philadelphia, New York, Rochester, Troy and Chester are the head-quarters of this branch. Buffalo and Chicago produce more agricultural machinery than any other cities, but, as a matter of fact, there are very few towns which do not contain some adjunct to this necessary trade, and even in the far North-west

we find small places, in which the population has probably been only of a couple of years date, possessing establishments for turning out doors, sashes, spokes, hubs, wheels, and everything that is requisite for settlers in a country where wood is unlimited in supply.

CHAPTER XII.

LESSON TABLE OF INDUSTRIES.

[Only the chief industrial places are mentioned. The figures denote the population according to the last census of 1870.]

ALABAMA (986,164)—Agriculture, maize and wheat; coal, iron, ore, lead, gold and manganese; marble; cotton, cane, sugar, rice, tobacco and wine; timber; textiles.

Anderson—Coal mining.

Birmingham—Iron ore mining; ironworks.

Cedar Bluffs—Ironworks.

Chambers—Cotton mills.

Clayton—Cotton mills.

Cullman—Car building; saw mills; furniture making; cigar trade; tanning; fruit canning.

Decatur—Coal mining.

Lauderdale—Cotton mills.

Mobile (32,034)—Cotton shipping port; cotton mills; oyster fisheries; iron foundries; machine shops; lumber trade.

Montgomery (10,588)—Cotton mills; tobacco trade; foundries.

Newtown—Cotton mills.
Stonewall—Ironworks.
Tuscaloosa (1,689)—Cotton mills; foundries; agricultural machinery.
Woodstock—Ironworks.

ARIZONA (41,710)—Agriculture, wheat and barley; coal, iron ore, gold, silver, copper, salt and gypsum.
Castle Dome—Lead mining.
Mohave—Gold and silver mining.
Tucson (3,224)—Gold and silver mining; quartz crushing.
Pinil—Gold and silver mining.
Yuma—Quartz mills.

ARKANSAS (484,471)—Agriculture, maize, wheat and oats; wool; coal, iron ore, zinc and lead cotton, rice, tobacco, molasses, wine and salt timber.
Camden (1,612)—River trade.
Helena (2,249)—River and general trade.
Hotsprings (1,276)—Whetstone quarries.
Little Rock (12,380)—Flour mills; foundries; door and sash works.
Ouachita—Flour and saw mills.
Pine Bluffs—Cotton and general trade.
Washington—Saw mills; wool-carding.

CALIFORNIA (560,247)—Agriculture, wheat, barley and fruit; wool; coal, gold, silver, copper, lead, iron ore, quicksilver and petroleum; flax and silk; tobacco, wine and olives.
Butte—Gold mining; quartz crushing.
Los Angeles—Tobacco growing; grist mills.

Marysville—Woollen factories; flour, saw and quartz mills.
New Almaden—Quicksilver mines.
Pico—Petroleum wells.
Sacramento (16,283)—River and mining trade.
San Fernando—Petroleum wells.
San Francisco (15,000)—Shipping port for bullion and grain; woollen mills; copper rolling; machine shops.
Santa Clara—Woollen and paper mills.
Yuba—Gold mining.

COLORADO (39,864)—Agriculture, wheat and maize; gold, silver, lead, iron ore and coal; lumber.
Arapahoe—Quartz mills; pottery; paper mills; machine shops.
Denver (15,000)—Iron works; woollen and flour mills; car and wagon building.
El Moro—Coke making.
Fremont—Woollen mills; tanneries.
Leadville—Silver and lead mining.

COLUMBIA DISTRICT (131,700).
Georgetown (11,384)—Shipping port.
Washington (150,000)—United States capital and seat of Government; printing and publishing.

CONNECTICUT (537,454)—Agriculture and dairy farming; iron ore, copper and lead; textiles.
Bridgeport (18,969)—Ironworks; sewing machines; carriage building.
Bristol—Copper mining.
Canaan—Iron ore mining.
Chatham—Cobalt mining.
Cornwall—Iron ore mining.

Glastonbury—Antimony mining.
Hartford (37,180)—Silk factories; tobacco trade; silver plating; pistols; screws; tools; sewing machines.
Housatonic Valley—Limestone quarrying.
Meriden (10,495)—Flint glass works; silver plating.
Middletown—River and coasting port; lead mining.
Milford—Marble quarrying.
New Britain (9,480)—Hardware; hosiery mills.
Newhaven (50,840)—Shipping port; car building; ammunition making; tool shops.
Norwalk—Engine factories.
Plainville—Nut and bolt making.
Rockville—Cotton mills.
Salisbury—Iron mining and ironworks.
South Manchester—Silk factories.
Stamford—Lockmaking.
Sunbury—Copper mining.
Thomaston—Cutlery.
Union City—Ironworks.
Wallingford—Cutlery and hardware.
Washington—Marble quarries.
Waterbury (10,826)—Watchmaking; brass ware; buttons; tools.

DAKOTA (14,180)—Agriculture, wheat and maize; iron, gold and silver.
Custer City—Gold mining.
Deadwood—Gold mining.
Fargo—Engine shops; lumber mills.
Yankton—Grain market; flour and saw mills.

DELAWARE (125,015)—Agriculture, maize, wheat and fruit: textiles.

Dover—Fruit canning.
Newcastle—Woollen factories.
Rockford—Woollen mills.
Wilmington (38,841)—Cotton and woollen factories; iron mills; ship-building; acid works; saw, flour, and paper mills.

FLORIDA (187,748)—Agriculture, maize and oats; cotton, jute and hemp; tobacco, sugar and indigo; fisheries; lumber.
Appalachicola—Shipping port and coasting trade.
Fernandina—Lumber shipping.
Jacksonville (6,912)—Lumber shipping; fisheries.
Key West—United States naval yard.
Ocala—Sugar mills; cotton growing.
Pensacola—Cotton and lumber shipping.
St. John's—Shad fishing.

GEORGIA (1,184,809)—Agriculture, maize and wheat; iron ore and gold; cotton and jute; tobacco and rice; textiles; lumber.
Albany—Woollen factories.
Athens—Cotton and woollen mills.
Atlanta (21,789)—Woollen mills; planing and rolling mills; machine shops; boot and shoe trade.
Augusta (15,386)—Iron foundries.
Bartow—Ironworks.
Brunswick—Rice mills; foundries.
Cedartown—Ironworks.
Chattooga—Cotton factories.
Columbus—Cotton and woollen mills.
Decatur—Cotton factories; lumber mills.
Franklin—Cotton mills.

Macon—Iron foundries; machine shops.
Milledgeville—Cotton factories.
Rome—Iron foundries.
Savannah (28,235)—Cotton and lumber shipping port.
Troupville—Cotton yarn factories.

IDAHO (14,999)—Agriculture, wheat and oats; gold and silver.
Ada—Flour mills; distilling.
Boise City—Gold mining; quartz crushing.

ILLINOIS (2,539,891)—Agriculture, maize, wheat and fruit; wool and flax; coal, iron, lead and petroleum; tobacco; hog raising and packing; textiles.
Batavia—Iron mills; agricultural implements.
Belleville—Coal mining.
Braidwood—Coal mining.
Carondelet—Ironworks.
Carpentersville—Iron and bolt works.
Centralia—Railway shops; nail factories.
Chicago (298,241)—Ironworks; grain shipping and flour mills; hog packing; clothing trades; boot and shoe trades; saddlery; agricultural implements.
Dixon—Flax mills; machine shops; foundries.
Elgin—Watchmaking; milk condensing.
Franklin—Fruit preserving; agricultural implements.
Freeport—Woollen factories; beetroot refining.
Galena—Lead mining and smelting; woollen mills; boot and shoe trade; wagon building.
Geneva—Jute spinning; cheese making; flour mills; machine shops.

Henry—Agricultural implements; flour mills.
Jerseyville—Car works; agricultural machinery; flour mills.
Joliet—Ironworks.
La Salle—Glass works; zinc smelting.
Monroe—Car works; roperies; breweries.
North Chicago—Ironworks.
Peoria—Grist and saw mills.
Rock Island—Government arsenal; distillery; pottery; paper, saw and iron mills; woollen factories; agricultural machinery.
Rockford—Paper mills; glove making; boot and shoe trade.
St. Charles—Cheese making; paper mills.
Sycamore—Flax mills, agricultural machinery.
Woodstock—Pickle making.

INDIANA (1,680,637)—Agriculture, maize, wheat, vegetables and fruit; coal, iron and petroleum; wool; lumber; textiles.
Delphi—Saw and paper mills.
Elkhart—Woollen factories.
Fort Wayne—Machine shops; iron foundries.
Indianopolis—Brass and iron foundries.
Jeffersonville—Glassworks.
Monticello—Woollen factories: saw mills.
New Albany—Iron and nail mills; plate glass works; woollen factories; edge tool and machine works.
Perry—Coal mining; cotton and woollen factories; furniture and woodware.
Putnam—Nail, chain and pump making; planing mills; woollen factories.

Richmond—Nail making; paper, saw and flour mills.

Rushville—Planing mills; waggon works; woollen factories.

South Bend—Sewing machines; tanning; agricultural implements; paper, flour and saw mills.

Tell City—Cotton and woollen factories; coal mining; quarrying.

Terre Haute (16,103)—Ironworks; woollen and cotton factories.

Vincennes—Fur and skin trade.

Wabash—Iron foundries; woodware; carriage works; woollen mills.

IOWA (1,194,020)—Agriculture, wheat, maize and barley; coal, iron ore and lead; wool; lumber; textiles.

Booneboro—Coal mining; potter's clay.

Burlington (20,256)—River trade; pork packing; iron foundries.

Cedar Rapids (5,940)—pork packing; woollen factories; agricultural implements; car building; oil mills.

Clinton—Lumber trade; agricultural machinery.

Council Bluffs (10,000)—Machine and tool shops.

Davenport (20,550)—Grain trade; woollen mills; boot and shoe trade.

Des Moines (15,061)—Woollen and paper mills; pottery; agricultural implements.

Dubuque (22,151)—Lead mining; river port; iron, woollen and paper mills; leather trade.

Kanesville—Woollen mills; foundries.

Keokuk (12,766)—River port; woollen factories.

Maquoqueta—Woollen mills; tanning.
Moingona—Coal mining.
Nevada—Coal mining; flour mills.
Ontario—Coal mining.
Renta—Glass works.
Sioux City—Pipestone quarries.
Washington—Flour mills.

KANSAS (610,863)—Agriculture, maize and wheat; coal and iron ore; tobacco and salt; textiles.
Atchison (7,054)—Woollen factories; flour mills.
Cherokee—Zinc smelting.
Kansas City—Stock transport; pork packing; iron mills.
Lawrence (8,320)—Woollen factories.
Leavenworth (17,873)—Iron foundries and machine shops; woollen, saw, and flour mills.
New Pittsburg—Zinc smelting.
Rosedale—Iron mills.
Topeka (5,790)—Iron mills.

KENTUCKY (1,321,011)—Agriculture and maize; coal, iron, lead and petroleum; tobacco and salt; lumber; textiles.
Ashland—Iron and nail works.
Covington (24,505)—Wire works; cotton factories.
Flemingsburg—Steam saw mills.
Frankfort—Lumber trade.
Greenup—Ironworks: flour mills.
Hanging Rock—Iron mining and works.
Louisville (100,753)—Ironworks; tobacco, whisky and pork packing trades.
Newport (15,087)—River trade.

Paducah (6,866)—Rolling mills; tobacco and cigar trade; car and waggon building; iron trade.

Red River—Ironworks.

Uniontown—Coal mining; distilling; flour and saw mills.

Warren—Brickyards; iron foundries; woollen mills.

Wurtland—Coal mining.

LOUISIANA (726,915)—Agriculture and maize; sugar and rice; cotton and jute.

Baton Rouge (6,498)—Rice mills; machine shops and iron foundries.

New Orleans (191,322)—Cotton and grain shipping; cotton factories; iron foundries; chemical works; boot and shoe trade.

MAINE (626,915)—Agriculture, maize, vegetables and fruit; copper; lumber; horse-breeding, and fisheries; quarries; textiles.

Aroostook—Starch factories.

Auburn (6,168)—Cotton factories; boot and shoe trade.

Bangor (18,289)—Shipping and lumber port; saw-works.

Belfast—Boot and shoe trade.

Biddeford (10,282)—Cotton manufactories.

Katahdin—Iron works.

Kittery—United States naval yard.

Lewiston (13,600)—Cotton and woollen factories; boot and shoe trade.

Norway—Boot and shoe trade.

Portland (31,413)—Shipping port for grain and cattle; machine works and foundries.

Presumpscot—Iron mills.
Saco (5,755)—Cotton mills.
West Waterbury—Scythe works.

MARYLAND (780,894)—Agriculture, maize and sweet potatoes; coal, iron and copper; tobacco; textiles.
Baltimore (267,354)—Shipping port for cotton and grain; cotton, woollen and silk mills; copper smelting; machine shops; tanneries.
Catoctin—Ironworks.
Cecil Co.—Rolling and planing mills; paper making; cotton factories.
Centreville—Car building; woollen factory; grist and saw mills.
Cumberland (8,036)—Collieries; cement works; rolling mills; machine shops; boat building.
Frostburg—Ironworks.
Howard—Cotton mills; curled hair factories.
Laurel—Cotton mills.

MASSACHUSETTS (1,457,351) — Market gardening; coal and iron; fisheries; quarries; textiles.
Abingdon—Nail and tack making.
Attleborough—Jewellery making.
Beverley—Boot and shoe trade.
Boston (360,000)—Shipping port for cotton; cotton and woollen factories; boot and shoe trade; leather trade; iron foundries; organ building; clothing factories; saw works.
Cambridge—Brick making; wood ware.
Cumberland—Coal mining.
Fairhaven—Nail and tack making.
Fall River (26,766)—Cotton and woollen mills; bleaching.

Fitchburg—Machine and tool shops.
Gloucester (15,389)—Cod and mackerel fishing; net making.
Haverhill (13,092)—Boot and shoe trade.
Holyoke (10,733)—Paper making; cotton and woollen factories.
Lawrence (28,291)—Cotton, woollen and worsted mills.
Lenox—Plate glass works.
Lowell (40,928)—Cotton and woollen factories; carpet works.
Lynn (28,233)—Boot and shoe trade.
Marblehead—Shipping port; boot and shoe trade.
Marlborough—Boot and shoe trade.
Milbury—Cotton and hosiery factories.
Monson—Granite quarrying.
New Bedford (21,320)—Whale fishing.
Newburyport (12,595)—Shipbuilding; cotton mills; boot and shoe trade.
Northampton—Silk mills.
Pelham—Granite quarrying.
Pocasset—Ironworks.
Quincy—Granite quarrying.
Salem (24,117)—Leather trade.
Springfield (26,703)—United States armoury; iron mills; paper collar making.
Stonehaven—Boot and shoe trade.
Taunton (18,629)—Cotton factories; hardwares; locomotive shops.
Waltham—Watch making.
Westfield—Whip making.
Weymouth—Boot and shoe trade.

Woburn—Leather trade.

Worcester (41,105)—Machine shops; wire mills; cotton factories; boot and shoe trade.

MICHIGAN (1,333,861)—Agriculture, wheat, maize, and fruit; coal, iron, silver and copper; wool; lumber and salt.

Adrian (8,863)—Iron foundries; car building; woollen and flour mills.

Ann Arbour (6,692)—Woollen, flour and saw mills; brewing; tanning.

Bangor—Ironworks.

Bay City (13,790)—Saw mills and lumber trade; salt wells.

Berrien—Flour and lumber trade.

Detroit (101,255)—Ironworks; varnish making; agricultural machinery.

East Saginaw (17,084)—Iron foundries; machine shops; paper mills.

Escanawba—Iron ore mining; copper mining.

Flint (8,197)—Saw and planing mills.

Fruitport—Ironworks.

Grand Rapids—Lumber trade; flour and saw mills.

Holland—Wood ware; saw mills.

Ishpenning—Iron ore and copper mining.

Jackson (13,859)—Machine and engine shops; potteries; saw and flour mills; waggon works.

Kalamazoo—Paper, flour and saw mills.

L'Anse—Copper mining.

Marquette (5,242)—Iron ore shipping; ironworks and mills; machine shops.

Muskegon (8,805)—Lumber trade; saw mills.

Negaunee—Iron ore mining.
Portage Lake—Copper smelting and rolling; candle making.
Saginaw City (10,864)—Saw and lumber mills; salt making.
St. Clair—Saw mills; car works.
St. Joseph—Woollen and paper factories; flour and saw mills.
Shrawassee—Woollen and flour mills.
Traverse—Lumber and flour trade.
Wyandotte—Ironworks; river shipbuilding.

MINNESOTA (439,706)—Agriculture, wheat and oats; iron and copper; lumber.
Duluth (5,000)—Lumber and grain shipping; iron mills.
East St. Cloud—Granite quarries.
Mankato (3,482)—Woollen mills; iron foundries; breweries.
Minneapolis (13,066)—Flour and saw mills.
Owatonna—Stoneware pottery; flour mills.
St. Anthony (5,013)—Flour and lumber mills.
St. Croix—Lumber trade.
St. Paul (20,130)—Lumber and flour mills; foundries.
Shakopee—Railway machine shops.
Wabashaw—Saw and planing mills; agricultural implements.
Winona (10,743)—Grain market; woollen and saw mills; agricultural machinery; soap and candle works.

MISSISSIPPI (827,922)—Agriculture, maize and sweet potatoes; cotton and rice; lumber; textiles.

Carrollton—Cotton mills.
Columbus (4,812)—River port for cotton shipping.
Copiah—Cotton and woollen manufactures.
Corinth—Cotton mills.
Grenada (1,887)—Rolling and planing mills.
Jackson (4,234)—Lumber trade; iron foundries.
Natchez (9,057)—Cotton shipping port.
Vicksburg (12,443)—Cotton shipping and river trade.
Wesson—Cotton and woollen mills.
MISSOURI (1,721,295)—Agriculture, maize and wheat; wine; wool and tobacco; pork packing; coal, iron, zinc and lead.
Cedar Mountain—Iron ore mining.
Crystal City—Plate glass works.
Hannibal (10,125)—Pork packing; lumber trade; iron foundries; car building; tobacco trade.
Iron Mountain—Iron mining and furnaces.
Irondale—Ironworks.
Jefferson City (7,500)—Iron foundries; flour mills; woodware.
Kansas City (40,000)—Hog packing and cattle trade.
Oregon—Iron foundries.
Pilot Knob—Iron ore mining.
St. Joseph (19,565)—Pork packing; flour and saw mills.
St. Louis (310,864)—Beef packing; iron foundries; woodware; tobacco mills; zinc smelting; saw works; whitelead making; dry goods trade.
Salem—Ironworks.
Shibboleth—Lead mining.

MONTANA (20,595)—Agriculture, wheat and vegetables; coal, iron, gold, silver and lead; lumber; stock raising.

Deer Lodge—Quartz mills.

Helena (3,106)—Quartz and flour mills; distilling; factories.

NEBRASKA (122,993)—Agriculture, wheat, maize and fruit; silver, coal and salt; stock raising.

Lincoln (6,500)—Salt works.

Nebraska City (6,050)—Foundries and nail making; flour mills.

Omaha (20,000)—Ironworks; machine and locomotive shops; pork packing.

NEVADA (42,491)—Agriculture, barley; gold, silver, lead, quicksilver and copper; salt and soda; lumber.

Carson City (3,042)—Quartz mills; wheel works.

Esmeralda—Salt beds.

Tybo—Lead mines.

Virginia City (7,048)—Silver mines of the Comstock Lode.

NEW HAMPSHIRE (318,300)—Agriculture, maize; gold and iron; granite; maple sugar; textiles.

Concord (12,241)—Cotton factories.

Dover (9,294)—Cotton and woollen mills; boot and shoe trade.

Manchester (25,355)—Cotton, worsted and flannel factories.

Nashua (10,543)—Ironworks; cotton mills.

Pike—Scythe making.

Portsmouth (9,241)—Shipping port.

Shelburne—Lead mining.

NEW JERSEY (906,096)—Agriculture, maize and market gardening; iron, copper, zinc and china clay; textiles.
Bergen Point—Zinc smelting.
Bridgeton (6,830)—Tool works.
Burlington (5,817)—Iron foundries.
Camden (33,966)—Iron foundries; glass works; nickel smelting.
Elizabethport—Sewing machines; tool and machine shops.
Franklin—Zinc mining.
Jersey City (85,355)—Cunard steamship docks; zinc smelting; woollen and print works.
Little Falls—Cheese factories.
Melville—Glass works.
Newark (125,000)—Cotton manufactures; lead and zinc smelting; saw works.
Paterson (33,579)—Silk mills; locomotive shops.
Perth Amboy—China clay digging; pottery.
Phillipsburg—Ironworks.
Secaucus—Bessemer steel works.
South Amboy—China clay and pottery.
Sparta—Zinc mining.
Stanhope—Ironworks.
Stirling Hill—Zinc mining.
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Woodbridge—China clay and pottery.
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Buffalo (134,238)—Shipping port for cattle and grain; iron, steel and wire works; ship building.

Cohoes (25,677)—Cotton and knit hosiery mills; ironworks.

Elmina (15,834)—Ironworks.

Greenpoint—Ship building.

Haverstraw Bay—Brick making.

Hoosick—Ironworks.

James Town—Chain making; organ building.

Lake Champlain—Iron ore mining.

Middleburgh—Paper making.

Middleton—Saw works.

New York (1,064,472)—Cotton and grain shipping and emigration port; ironworks; oil refining; woollen and carpet factories, etc.

Onondaga—Salt works.

Port Henry—Iron ore mining and shipping.

Rochester (81,813)—Cotton factories; saw and axe works; machine shops; flour mills.

Rome (12,511)—Ironworks.

Seneca Falls—Pump works.

Shenectady—Locomotive works.

Syracuse (49,808)—Ironworks; breweries; salt works; machine shops.

Tarrytown—Brick making.

Troy (48,708)—Iron and steel works.
Wassaic—Ironworks.
Watertown (10,005)—Sewing machines.
Westchester—Marble quarries.
Williamsburg—United States naval yard.
Utica—Cheese factories.

NORTH CAROLINA (1,071,361)—Iron, gold, silver, copper, zinc and lead; cotton, rice, tobacco and sugar; fisheries; lumber and turpentine; textiles.
Abbeville—Gold mining.
Catawba—Cotton and woollen mills.
Charlotte (4,473)—Gold mining.
Concord—Cotton and woollen factories.
Dallas—Cotton mills; distilling.
Elkin—Woollen mills.
Fayetteville (4,660)—Lumber, tar and turpentine trade.
Franklinsville—Iron ore mining.
Graham—Cotton mills.
Jamestown—Copper mining.
Leakesville—Woollen mills.
Lincolnton—Paper and cotton mills.
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Rockingham—Cotton factories.
Silver Hill—Lead mining.
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naval stores; fish packing; turpentine works; cotton, saw and planing mills.

OHIO (2,665,660)—Agriculture, maize, wheat and fruit; coal, iron and petroleum; wool and flax; salt and gypsum.

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Bellaire—Glass works.

Burgess—Steel and iron works.

Cincinnati (216,239)—River port; ironworks; pork packing; hardware and agricultural implements; boot and shoe trade; soap and candle making.

Cleveland (92,829)—Ironworks; hammer works; pork packing; petroleum refining.

Columbus—Glass works.

Cuyahoga—Ironworks.

East Liverpool—Pottery.

Fayette—Woollen mills.

Geauga—Cheese factories.

Geneva—Lock making.

Hamilton (11,081)—Foundries; agricultural implements; paper mills; woollen factories; wood ware.

Hocking—Coal mining; ironworks; woollen mills; saw mills.

Ironton—Steel and iron works.

Jackson—Ironworks; woollen mills; wood ware.

La Grange—Glass works.

Madison—Woollen mills.

Mahoning Valley—Coal mining; ironworks.

Niles—Ironworks.

Pomeroy—Coal mining; rolling mills; salt works; woollen mills.

Portsmouth—Steel and ironworks.

Sandusky (13,000)—wood ware; wheel making; woollen mills.

Steubenville (8,107)—Glass works.

Toledo (31,584)—Shipping port and general trade.

Tuscarewas—Collieries and iron mills.

Washington—Rolling mills, machine shops; tanning.

Wooster—Locomotive shops; agricultural implements; paper mills.

Zanesville (10,011)—Glass works.

OREGON (90,923)—Agriculture, maize and wheat; coal, gold and silver; lumber; fisheries.

Astoria—Shipping port.

Baber—Gold mining.

Coos Bay—Coal mining.

Columbia River—Lumber trade; salmon fisheries.

Oregon City—Lumber and flour mills.

Oswego—Ironworks.

Portland—Salmon tinning; lumber trade; grain shipping.

PENNSYLVANIA (3,521,951)—Agriculture, maize and wheat; coal, iron, zinc, copper and petroleum; quarries; textiles.

Altoona (10,610)—Locomotive and machine shops; foundries.

Allen Town (13,884)—Iron mills and foundries.

Beaver—Wire and rivet making; cutlery; glass works; iron foundries; agricultural implements; woollen mills.

Bethlehem (4,512)—Iron and steel works; zinc smelting.
Blossburg—Coal mining.
Cambria—Iron and steel works; foundries; paper mills.
Carbondale—Coal mining; machine shops; car building.
Catasawqua—Wheel works.
Chester (9,485)—Copper mining; steel works; axe works.
Clearfield—Coal mining; foundries and planing mills.
Connelsville—Coke making.
Cornwall Banks—Iron ore mining; ironworks.
Danville (8,536)—Ironworks.
Erie (23,000)—Shipping port; foundries; agricultural implements.
Harrisburg (25,000)—Rolling mills and foundries; machine shops; car building.
Johnstown—Iron mining; iron and steel works.
Juniata—Ironworks; tanning; woollen mills.
Indiana—Planing and paper mills.
Lackawanna Valley—Coal mining.
Lancaster (22,360)—Coal and lumber trade; agricultural implements; machine shops.
Lebanon (6,727)—Ironworks; locomotive shops.
Lehigh—Coal mining; ironworks and mills; zinc smelting.
Luzerne—Machine and boiler shops; stove foundries; car building.
Mauch Chunk—Coal mining.
Millertown—Petroleum wells.

Northampton—Slate quarrying; iron ore mining.
Oil City—Petroleum wells.
Philadelphia (817,448)—Shipping port for cotton, grain and cattle; woollen and carpet manufactories; iron foundries and machine shops; plate glass works; locomotive works; ship building.
Pithole—Petroleum wells.
Pittsburg (208,485)—Collieries; ironworks and foundries; glass houses; lead smelting; oil refineries; locomotive and machine shops.
Reading (40,000)—Railway coal centre; ironworks; hardwares.
Scranton (45,000)—Coal mining; coal and iron shipping.
Schuylkill—Coal mining.
Tioga—Coal mining.
Titusville—Petroleum wells.
Union—Woollen factories; agricultural implements.
Wilkesbarre (23,000)—Coal trade.
Williamsport (19,000)—Lumber trade.
RHODE ISLAND (217,353)—Coal and iron; fisheries; textiles.
Bristol (5,302)—Ship building and shipping port.
Cranston (4,822)—Iron ore mining.
Crompton—Cotton manufactories and printing.
Cumberland—Iron ore mining.
Newport (12,521)—Shipping port.
Portsmouth—Coal mining.
Providence (88,499)—Shipping port; cotton and woollen mills; hardware; locomotive and machine shops; jewellery.
Taunton—Copper smelting.

Warwick (10,453)—Cotton factories.

Woonsocket (11,527)—Woollen and cotton mills; machine shops.

SOUTH CAROLINA (705,600) — Agriculture, maize, cotton and rice; gold; china clay; turpentine; textiles.

Beaufort—Cotton mills.

Charlestown (55,000)—Shipping port for cotton, phosphates and naval stores; rice mills; turpentine works; agricultural machinery.

Columbia (9,298)—Ironworks; machine shops; wagon building.

Fingusville—Cotton mills.

Graniteville—Woollen and cotton mills.

Greenville (3,135)—Paper, woollen and cotton mills.

Lexington—Cotton mills.

Spartanburg—Cotton mills.

TENNESSEE (1,258,520)—Agriculture, maize; coal, iron, gold, copper, zinc, lead and petroleum; cotton, tobacco and rice; wool and lumber; textiles.

Blountsville—Cotton and woollen mills.

Chattanooga (10,000)—River port; coal and ironworks.

Coal Creek—Coal mining; ironworks.

Ducktown—Copper mining and smelting.

Macminnville—Cotton and woolcarding factories; flour mills.

Memphis (65,000)—River port; ship building; cotton oil.

Montgomery—Woollen and planing mills.

Nashville (40,000)—Flour, saw and planing mills; tanneries; iron foundries and machine shops; paper mills.

Roane—Ironworks.

Rockwood—Coal mining.

TEXAS (818,579)—Agriculture, maize; coal, iron, china clay, gypsum and salt; wool and lumber; live stock.

Columbus—Sugar mills; cigar making; brewing; cotton spinning.

Galveston (25,000)—Shipping port for cotton and cattle; beef packing; hides and skins.

Houston (13,818)—Iron and brass founding; machine shops; car building; lumber trade; beef packing.

Jasper—Cotton mills; distilleries; machine shops.

Kellyville—Ironworks.

San Antonio (12,256)—General trade.

Victoria—Cotton spinning; beef packing.

UTAH (86,786)—Iron, gold, silver, lead and salt lumber.

Salt Lake City (12,854)—General trade.

Stormont—Gold mining and quartz crushing.

VERMONT (330,551)—Agriculture, maize and oats; dairy farming; coal, iron, copper and china clay; wool and lumber; textiles.

Bennington (5,760)—Pottery and porcelain.

Burlington (14,387)—Shipping port.

Middlebury (3,086)—Cotton mills; marble quarries.

Montpelier (3,023)—Cotton factories.

Rutland (9,834)—Marble and slate quarries; scale making; tanning; carriage building.

St. Albans (7,014)—Railway fitting shops; carriage building.

Vergennes—Nail making.

VIRGINIA (1,225,163)—Agriculture, maize; coal, iron, gold, copper, lead and salt; cotton and tobacco; wool and lumber; textiles.

Alexandria (13,570)—Cotton mills; iron foundries; distillery.

Altoona—Coal mining.

Blacksburg—Coal mining.

Buffalo Gap—Ironworks.

Campbell—Ironworks and railway fitting shops; tobacco trade.

Charlottesville (2,838)—Cotton mills; wine making.

Fauquier—Gold mining.

Fredericksburg (4,046)—Paper, sumach, flour and woollen mills; car building; tanning.

Gosport—United States naval yard.

Hale—Copper smelting.

Lynchburg (13,000)—tobacco trade; iron foundries.

Millington—Woollen mills.

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WASHINGTON TERRITORY (23,955)—Gold and silver; fisheries; lumber and stock raising.

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WEST VIRGINIA (442,014)—Agriculture, maize; coal, iron and petroleum; tobacco.

Charleston (5,000)—Coal and lumber shipping.

Clifton—Iron and nail mills.

Jackson—Woollen mills; cigar and tobacco trade; boat building.

Kanawha—Coal mining; woollen and saw mills.

Martinsburg (7,000)—Machine shops.

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WISCONSIN (1,054,670)—Agriculture, wheat, oats and maize; iron, copper, zinc, lead; wool and lumber; textiles.

Arlington Heights—Brass founding.

Eau Claire—Lumber trade.

Evansville—Boot and shoe trade; cheese factories.

Fond du Lac (12,764)—Woollen mills; wire foundries; lumber trade; agricultural implements; paper mills.

Iron Ridge—Ironworks.

Jamesville—Cotton mills; waterproofing; woodware.

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La Crosse (10,000)—Agricultural implements; stone cutting; saw mills.

Milwaukee (101,049)—Shipping port for grain,

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Oshkosh (15,000)—Woollen mills; paper and flour mills.

Racine (15,000)—Shipping port for grain and provisions.

Sheboygan (5,310)—Shipping port; foundries and chain making; woollen mills.

Sparta—Grain trade; paper mills.

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